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Costs of Different Classes of Telephone Service.

A decision of great interest to telephone men is one which was made public last week by the Wisconsin Railroad Commission. It was rendered in the case of an application for an increase in rates by the St. Croix Telephone Co., of New Richmond, Wis. In its consideration of this case, the Wisconsin commission made a very thorough investigation of all conditions with the purpose in view of obtaining the cost of furnishing service to the different classes of subscribers. This is the first time that a commission has made an analysis of service costs in such detail.

Costs of service have been recognized by regulating bodies in sanctioning schedules promulgated by other utilities, such as electricity and gas. The Wisconsin commission does not believe that the telephone business is so far apart from other lines of business that its expenses cannot be analyzed and the cost of serving each class of its patrons determined. It recognizes that within limits there is much truth in the claim that telephone rates are based upon the value of the service to the various classes of patrons. Two causes are stated to be the reason why no schedule of telephone rates which has been established, has resulted from a consideration and analysis of all the factors which go to make up the cost of service to all classes of users.

The first of these is stated to be the fact, with some exceptions, that the telephone exchange business is a business of flat rates. The second cause is the fact that telephone service is always a service to two parties—the one calling and the one called.

In regard to the first condition, it is stated to be practical, even without measured service, to determine for each class of users the extent of use made of each class of service. This may be accomplished through traffic studies which will furnish statistics of the traffic showing with sufficient accuracy what use of the service is made by each class of users. Consequently, although the use of flat rates prevents carrying the distribution of expenses to a point of making different rates for users receiving the same class of service, it does permit securing a distribution of expenses among classes.

In regard to the other cause of failure to develop well recognized principles of cost distribution in fixing telephone rates, confusion has been caused because every unit of service rendered is furnished to two parties and the principles to be observed in dividing the cost between the parties have not been clear.

In making the analysis of the costs, the investigation of the Wisconsin commission was divided into two sections. The first section was a direct allocation of the various expenses to each class of service. In making this allocation the procedure of the telephone rate-making which has been used up to the present time was followed. The second section is a re-apportionment of certain of the allocated groups of expense of the first section from one class of service to the other on the basis of use as indicated by the traffic study. This was done in following out the idea of dividing the cost of the unit of service between the two consumers responsible for it.

The data necessary to a determination of rates by this method are: A valuation of all property, a traffic study and a detailed statement of the expenses of the utility—all of these to be representative of normal average conditions in the utility.

The principles developed in this investigation will undoubtedly be applied by the Wisconsin commission in other telephone rate cases, and commissions in other states will probably make application of some of the principles in their decisions. For this reason, the entire decision of the commission is published in Telephony. The principles involved are shown and their specific application to the St. Croix case given.

To High Brow, Low Brow or Brow-Beaten

By HERBERT KAUFMAN

Ideals are not attained without ideas. A career must be thought out and then fought out. Goals are easily chosen, but seldom reached.

Wit must survey the way—then grit must build the road. Sagacity projects the dream and tenacity perfects the scheme.

The word derives no benefit from the inert, content with believing in betterment—only from those intent to achieve it.

We do not lack standards—we stand in need of standard bearers. The world is crowded with teachers ready to supply knowledge for a paltry sum, but commerce and industry are constantly crying for the unusual mind which can apply the rules of the schools.

College may train you how to think, but observation alone will tell you what and where to think with profit to yourself and time. Culture furnishes a finish—action provides a start.

Text-books are filled with keys to success, but practical experience locates the problems which await unlocking. There's work enough for all the hands and eyes on earth.

Year by year society removes for the son a barrier which thwarted the father. Day by day philanthropy and humanitarianism minimize the handicaps of poverty and reduce the adverse chances for the pauper's children.

The greatest difficulty that faces you is the test that differentiates the theorist from the producer. Within stone's throw of every human, opportunity offers a chance for originality and determination.

The resources of the future are only limited by the resource of eager brains. As soon as one inventive faculty displays a neglected highway a dozen minds are quick to detect a score of by-paths which the pioneer himself overlooked.

Inspiration breeds aspiration and competition. He who erects a stronger telescope than his predecessors is always rewarded by a new star.

This is the great hour. What has been done is an insignificant earnest of the potentialities of the mighty eras beyond the dawn. Now is the time to think, now is the time to strive, now is the time to do.

But men who trudge in time-worn ruts, who search in crowded thoroughfares, who look for opportunity in exhausted fields, who prospect in sterile mines, who plant their efforts in abandoned soil, who inquire of tomorrow from yesterday, must live unnoted and die obscure.

Feet alone can never find the passage to the heights of fame. Imagination is the searchlight that unmasks the path, and none but the dauntless can reach as far as they can see.

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Service Cost of Telephones Described by Commission

Epochal Decision of Wisconsin Railroad Commission Relative to Costs for Different Classes of Telehone Service—In Application of St. Croix Telephone Co. for Increase in Rates, Cost of Service Is Allocated to Each Class of Subscriber

A decision of epochal importance to the telephone industries was announced last week by the Wisconsin Railroad Commission. It describes in detail the method of allocating telephone accounts so as to give the cost of the service to each class of subscribers. Commissioner Halford Erickson, under whose personal direction the matter has been worked out, says that no recent decision of the commission affecting telephones will have the effect of the decision in the St. Croix Telephone Co. case.

In the making of rates of telephone companies, the cost method has been recognized by the commission before, but never before have the accounts of the company been allocated and analyzed in such detail as to show the exact result. With this decision as the basis, other telephone rate decisions of the Wisconsin commission will follow the same general plan. Telephone men in Wisconsin claim that the announcement of this decision will prove a model that other states will quickly follow in fixing telephone rates.

The application in this matter was dated January 22, 1914, and a hearing was held at New Richmond, Wis., April 3, 1914. The applicant, the St. Croix Telephone Co., is a public utility engaged in the management and operation of a telephone exchange at New Richmond, where the following rates are in force as set forth in the application:

Connection companies.....$3 per year.
Rural telephones.....$1.50 per month, with a 25-cent discount for payment before the 15th of the month.
Business telephones.....$2.25 per month, with a 25-cent discount for payment before the 15th of the month.
Residence telephones.....$1.25 per month, with a 25-cent discount for payment before the 15th of the month.
Extension bells.....15 cents per month.
Extension telephones.....75 cents per month.

In its application, the St. Croix company stated as its reason for asking authority to increase rates, that its present yearly earnings are not sufficient to meet current expenses, to make provision for depreciation and dividends and build up a sufficient reserve for extraordinary contingencies. It said that to continue to give single-party service to residences would necessitate a large amount of additional cable. The company also has under consideration the erection of a new office building. These improvements would necessarily increase its cost somewhat but would enable it to give more efficient service. The company desired to put into effect the following schedule of rates:

Connecting companies.....$4 per year, with no provision for a discount.
Rural telephones.....$1.50 per month.
Business telephones.....$2.50 per month.
One-party residence telephones.....$1.50 per month.
Two-party residence telephones.....$1.40 per month.
Four-party residence telephones.....$1.25 per month.

Rural, business and residence telephone rates to be subject to a discount of 25 cents per month for payment before the 15th.

Business extension telephones.....75 cents per month.
Residence extension telephones.....50 cents per month.
Extension bell .....15 cents per month.

After an analysis in considerable detail of the cost of furnishing service, the rates as asked for the residence telephones and also for extensions were approved by the commission. The application as it affected other rates was denied but the company was granted the right to file with the commission a rule providing a reasonable penalty for failure to pay bills promptly. The analysis which the commission made of the cost for furnishing service to the different classes and the principles applied follow:

A valuation of the property was made as of March 1, 1914. The final summary of this valuation is given above.

The cost of the service as a basis for rate making has received rather general recognition in the adjustment of rates

	Local		Rural		Switching		Total	
	Cost New	Present Value	Cost New	Present Value	Cost New	Present Value	Cost New	Present Value
A. Land	.....	.....	.....	.....	.....	.....	.....	.....
B. Distribution system	$12,568	$ 8,496	$8,730	$6,020	$567	$330	$21,865	$14,846
C. Buildings and miscellaneous structures	.....	.....	.....	.....	.....	.....	.....	.....
D. Exchange equipment	1,536	1,197	51	40	110	86	1,697	1,329
E. General equipment	293	176	135	72	6	4	434	252
Total	$14,397	$ 9,869	$8,916	$6,132	$683	$420	$23,996	$16,421
*Add 12 per cent	1,728	1,184	1,070	736	82	50	2,880	1,970
Total	$16,125	$11,053	$9,986	$6,868	$765	$470	$26,876	$18,391
F. Paving	.....	.....	.....	.....	.....	.....	.....	.....
Total	$16,125	$11,053	$9,986	$6,868	$765	$470	$26,876	$18,391
H. Materials and supplies	259	254	193	189	6	5	458	448
Total	$16,384	$11,307	$10,179	$7,057	$771	$475	$27,334	$18,839
J. Non-operating	.....	.....	.....	.....	.....	.....	647	636
Total	$16,384	$11,307	$10,179	$7,057	$771	$475	$27,981	$19,475

*Addition of 12 per cent. to cover engineering, superintendence, interest during construction, contingencies, etc.

Valuation of the St. Croix Telephone Co., New Richmond, Wis., as of March 1, 1914.

for such public services as those furnished by water, gas, and electric supply utilities. In all of these, the methods of cost determination have been, to some degree, standardized and the relations of rate schedules to cost of service are generally recognized. In the development of these methods, utilities, public service commissions, and other agencies, although differing in details, have generally given recognition to certain elements affecting the cost of service which are fundamental.

The result has been that, although the schedules promulgated by utilities or by regulating bodies have differed in form, they have generally been so framed as to secure a distribution of the expenses among the various classes of users in accordance with the cost of furnishing service to these classes. That many schedules have not been framed in such a way as to secure a proper distribution of costs is, of course, true. But reference is here intended to schedules, which, in some form or other, give recognition to the fact that some expenses are influenced by demand and others by output, and that the consumer with the best load factor, other things being equal, should secure the lowest rate.

It seems to us that the telephone business, although differing in many important respects from the business of an electric supply utility, is not so far set apart from other lines of business that its expenses cannot be analyzed and the cost of serving each class of its patrons determined. It has been very generally claimed that telephone rates are based upon the value of the service to the various classes of patrons and we recognize that, within limits, there is much truth in this.

The Failure to Develop Cost Distribution Principles.

As far as we are able to find, no schedule of telephone rates which has been established, has resulted from a consideration and analysis of all the factors which go to make up the cost of telephone service to various classes of users. Many causes for this there undoubtedly are, but among them there are two which, to us, seem to have been principally responsible for the failure of utilities and public authorities to develop cost basis schedules of telephone rates.

The first of these causes is the fact that, with some exceptions, the telephone exchange business is a business of flat rates. Although some flat rate schedules for the use of electric current have, in a measure, given recognition to the nature of the expenses incurred in supplying current, the general recognition and application of these principles have been closely connected with the development of the present-day types of meter rates.

There seems to be a somewhat similar condition in the telephone business. In practically all of the smaller telephone exchanges, the schedules provide a uniform charge for unlimited exchange service within each class of users. Telephone managers have been confronted with the problem of a proper adjustment of measured service rates, to a much less degree than have managers in other lines of utility business, notably that of supplying electric current.

The fact that telephone service is, and probably to a large extent will continue to be, supplied at flat rates, of course, means that, within any given class of users, it is impracticable to so adjust charges as to distribute to each user in that class his own share of variable expenses. However, in the telephone business, even without measured service, it is practicable to determine for each class of users, the extent of use made of the service. In the electric business, residences, offices, stores, and other classes of users may take their supply of current from the same line and, without separately metering the supply of each user, it would be difficult to determine the use of current by any class of users.

By the use of traffic studies such as the commission has outlined in a number of decisions, it is possible to obtain statistics of telephone traffic which show, with sufficient accuracy, what use of the service is made by each class of users. As between one class of users and another class, therefore, it is possible to determine the difference in the use of the service. Consequently, although the use of flat rates for telephone service prevents us from carrying the distribution of expenses to the point of making different rates for users receiving the same class of service, it does permit us to secure a distribution of expenses among classes.

The other cause of the failure to develop well recognized principles of cost distribution in fixing telephone rates, is the fact that telephone service is always a service to two parties—the one calling and the other called. Efforts to establish rates based on the cost of service have led to confusion because every unit of service rendered is furnished to two parties, and the principles to be observed in dividing the cost between the parties have not been clear.

It has been in an attempt to develop principles of cost apportionment that the commission has made a special study of this case. Although some of the data which would be desirable for a careful cost analysis, have not been available in this case, there has been enough information available to enable us to test methods employed rather carefully. We do not feel that the discussion embodied in this opinion completely covers the situation nor that many of the methods therein set forth can be considered as finally accepted, but they do seem to show something regarding the lines along which an investigation of costs of telephone service should be conducted and for this reason have been included in this decision.

At first glance, it may appear that certain of the methods which have been employed in the following cost apportionments are at variance with the principles followed in making corresponding apportionments in other lines of utility business, such, for example, as the business of supplying electric current. In that business the two most important factors affecting the cost of service, are: The demand which the utility must be prepared to meet, and the output which it actually makes. A third factor, usually of less importance, but by no means negligible, is the existence of the consumer and the investment required to serve him.

The fixed charges on consumers' equipment and the expense of dealing with consumers, as distinct from the cost of generating and distributing current, make up the consumer expense which is divided among the consumers and should be borne, in one form or another, as a fixed expense incident to their being consumers. Other expenses are divided into demand or capacity expenses, and output expenses and interest on other portions of the equipment are treated as overhead to these expenses.

This means that for an electric utility, the larger part of interest and other fixed charges are apportioned on an overhead basis between demand and output expenses. Interest charges are incurred in order that equipment may be in place to meet the greatest demand and to furnish the required output. The commission has considered their division on the basis of the division of the expenses, to be a reasonable basis.

The methods of handling interest and other fixed charges in the following discussion may seem quite different from these outlined as used in cases involving electric utility rates, but the differences are differences in proportion, resulting from differences in the nature of the businesses, rather than in principle.

Expenses are Largely Consumer Expenses.

Leaving out of consideration, for the moment, the interrelation of subscribers in all telephone service, we find that telephone expenses are largely consumer expenses. The substations, the lines, and even portions of the switchboard, are installed to extend service to individual users. True, there are party lines, but for the most part patrons on these lines are of the same class and an equal division of party line investment among the parties connected may be made. Some

portions of the wire plant, of course, are joint, but their use is such that their apportionment to the various subscribers served is not difficult. Both direct expenses and fixed charges connected with substation equipment and wire plant, may, therefore, in the first instance be considered consumer expenses. The later handling of these expenses, to give consideration to subscribers' interdependence, is discussed later.

In the electric business, expense which can be directly allocated to consumers, are practically confined to those incurred in connection with investment on consumers' promises and with keeping consumers' accounts. Thus we find that the allocation to subscribers of expenses and of fixed charges on equipment does not differ in principle from such allocation in the apportionment of electric utility expenses. The difference is in the proportion of total expenses so allocated. Consumer expenses, in the telephone business, embrace a relatively large part of total expenses, but in the handling of these expenses the methods and principles are not materially different from those employed in cases involving rates of other utilities.

Neither are the methods followed with other than consumer expenses inconsistent with those followed in other classes of utility rate cases. Whether or not it can be accepted as a general proposition, it has appeared that no necessity existed in this case for distinguishing between demand and output expenses. The same has been found true in certain gas rate cases which the commission has considered.

There are undoubtedly certain portions of the expenses of a telephone utility which are influenced by the demand, as represented by the peak of the traffic, but a consideration of the conditions of operation at New Richmond indicates that no separate consideration of such expenses is necessary. Most of the direct operating expenses in the first apportionment discussed later, which have not been allocated directly to the various classes of users, appear to be expenses which may be apportioned on the basis of *use* of the service, or an *output* basis. Fixed charges on portions of the equipment used where this output expense is incurred, have been treated as an output expense. Fixed charges on general equipment have been apportioned on an overhead basis.

Differences in Method Details Rather Than Principles.

In adapting the principles discussed in this decision to the telephone business generally, so far as such principles may be found useful, it may be found advisable to make an apportionment of certain of the expenses between demand and output expenses. The fact that this was not considered necessary in connection with this case, constitutes the only material departure from the general practice in other utility cases, in the apportionment of fixed charges. Other differences were in details of methods employed rather than in principles observed.

Numerous schemes have been devised for the scientific determination of telephone rate schedules upon a cost basis but very few, if any, of the schemes proposed have proved entirely feasible in their practical application. The usual method heretofore followed by this commission in cases where cost analyses have been attempted, has been to make *allocations* to various classes of service of the expense *directly* incident to the maintenance and operation of that portion of the entire property which connects these classes with the central office, and to use this figure as a guide in the determination of the rate.

This principle in its broadest sense, has been applied successfully in the determination of rates for gas, electric, and water utilities, but it has not proved entirely successful in the telephone field. The reason for this is apparent when we take into consideration the fact that the method of use of the service offered by the telephone company is quite different from what it is in any of the other utilities. In the gas, electric, and water utilities, *one* consumer is responsible for the unit of the utility's product consumed. But in the telephone utility two consumers are responsible and necessary for the consumption of the unit of product of the service.

Inasmuch as there is this difference in manner of consumption between the telephone and other utilities, such an extension of the principles of rate making at present in use as will take into consideration the fact that two consumers are involved instead of one and which will apportion between those two consumers upon some logical basis the cost to produce the service, would seem to be justifiable and necessary to the proper solution of the telephone rate problem.

The Two Divisions of the Determination.

The first section of the proposed determination will be a *direct allocation* of the various expenses to each class of service; in other words, will follow in line with the procedure of telephone rate making which has been used up to the present time. This section of the determination will be called the "First Apportionment."

The second section of the determination will be a re-apportionment of certain of the allocated groups of expense of the first apportionment from one class of service to the other on the basis of *use* as indicated by the traffic study, thus following out the idea of dividing the cost of the unit of service between the two consumers who are responsible for it.

The data necessary to a determination of rates by the use of this method are: A valuation of all property; a traffic study; and a detailed statement of the expenses of the utility —all of these factors to be representative of normal average conditions in the utility.

Inasmuch as we shall combine the working out of this method of rate determination with its application to a concrete case, it seems well at this point to briefly describe the physical aspects of the telephone situation to which this method is to be applied.

New Richmond is a village of 2,000 inhabitants located in St. Croix county and is the center of a very good farming community. The St. Croix Telephone Co. operates an exchange in the city serving some 281 residence subscribers, over 261 lines, 86 business subscribers over 81 lines, 161 of its own rural subscribers over 13 lines, and 340 subscribers over 26 farm lines built and owned by farm line companies. The St. Croix company performs switching service for these latter companies, each company building to the city limits of New Richmond. Besides serving the above local and foreign patrons, the St. Croix exchange is connected with 10 toll lines of the Wisconsin Telephone Co. for which it acts as a checking station in addition to handling the toll to local, and local to toll, traffic.

Data Obtained in St. Croix Case.

It will be apparent that the patrons of this utility may logically be divided among the following five classes of service: Residence, business, St. Croix rural, foreign rural and toll.

The St. Croix company is now petitioning for an increase in rates. A hearing has been held from which, in conjunction with subsequent investigations by the commission, the following data have been obtained:

First, a detailed valuation of the St. Croix Telephone Co.'s property, and approximate valuation of the switching lines' property.

Second, a traffic study of all lines for a period of 24 hours.

Third, an audit of the expenses of the St. Croix company for the year ending June 30, 1914, together with the annual reports of the company for this and other years.

Explanation of Bases of Apportionment.

Before proceeding with the details of the apportionment, it may be well to present a summary of various bases which will be used. On the following page is such a summary which will be referred to in connection with the actual apportionments later in the decision.

Substation Basis No. 1 determines the percentages which

SUBSTATION BASIS No. 1.

	No. Telephones	Percentage of Total No. Telephones	Percentage of Residence and and Business Total Telephones
Residence	291	33.0	77
Business	86	9.7	23
St. Croix rural	161	18.6	
Foreign rural	340	38.7	
Total	878	100.0	

SUBSTATION BASIS No. 2.

Residence	291	51.6
Business	86	15.2
St. Croix rural	161	28.6
Foreign rural	26	4.6
Total	564	100.0

SUBSTATION BASIS No. 3.

Residence	291	54.1
Business	86	16.0
St. Croix rural	161	29.9
Foreign rural	omitted	
Total	538	100.0

LINES BASIS No. 1.

	No. Lines	Percentage
Residence	261	66.8
Business	81	20.5
St. Croix rural	13	3.3
Foreign rural	26	6.7
Toll	10	2.7
Total	391	100.0

LINES BASIS No. 2.

Residence	261	68.5
Business	81	21.3
St. Croix rural	13	3.4
Foreign rural	26	6.8
Total	381	100.0

WIRE MILE BASIS No. 1.

	Wire Miles	Percentage of Total	Residence Business Wire Miles
Residence	95.42	27.0	87
Business	14.58	4.0	13
St. Croix rural	232.3	65.5	
Foreign (city)	12.3	3.5	

WIRE MILE BASIS No. 2.

Residence	95.42	10.6
Business	14.58	1.6
St. Croix rural	232.30	25.8
Foreign city and rural	557.05	62.0
Total	899.35	100.0

RINGING BASIS.

Total toll calls to	Calls	Loading Factor	Weighted Calls	Total	Per cent.	Am'nt
Residence	34	1.50	51			
Business	47	1.50	71			
St. Croix rural	8	4.00	32			
Foreign rural	36	4.25	153			
Local operator (from toll operator	125	1.00	125			
Toll operator (from local operator)	114	1.00	114			
Toll lines	92	2.00	184			
Five-cent line	57	4.00	228			
Bell switching lines	54	3.50	189			
Bell toll lines	137	2.00	274	1,421	9.2	5.73
Total local calls to						
Residence	1,686	1.50	2,529		16.5	10.28
Business	902	1.50	2,353		8.8	5.48
St. Croix rural	924	4.00	3,696		24.0	14.95
Foreign rural	1,499	4.25	6,371	13,949	41.5	25.84
				16,350	100.0	$62.28

ORIGINATING CALLS BASIS.

Total calls from	Calls	Total
Residence	1,342	24.7
Business	995	18.3
St. Croix rural	950	17.5
Foreign rural	1,609	29.6
Toll	537	9.9
	5,433	100.0

Computations for Bases of Apportionment.

the number of substations in each class of service are of the total number of substations including *all* foreign rural substations. There are also shown in the last column in this computation, the percentages which the residence telephones and business telephones are of the total residence and busisnss telephones.

Substation Basis No. 2 is similar to substation Basis No. 1, except that the number of "Foreign rural" *lines* (26) is used in place of "Foreign rural" *telephones* (340).

Substation Basis No. 3 differs from Nos. 1 and 2 in that both "Foreign rural" *lines* and *telephones* are left out of consideration.

Lines Basis No. 1 determines the percentages which the number of *lines* is each class of service is of the *total* lines connected to the New Richmond exchange.

Lines Basis No. 2 differs from No. 1 in that the percentages are determined with the "Toll lines" omitted.

Wire Mile Basis No. 1 determines the percentages which the number of miles of wire in each class of service is of the total miles of wire owned by the St. Croix Telephone Co. (excluding the wire owned by "Foreign rural" companies.)

Wire Mile Basis No. 2 differs from No. 1 in that the wire owned by the "Foreign rural" companies is included in the computation.

The "Ringing Basis" provides a means of apportioning certain expenses incident to the power plant. The upper portion of the computation relates to toll calls *terminated* at the New Richmond exchange and the lower portion to local *calls* also terminated at the New Richmond exchange. The first vertical column gives the total *terminated* calls of each class of service, and the second column contains loading factors designed to take into account the relative amount of power used in the ringing per call of the various classes of service. The third vertical column shows the results of multiplying the calls of each class by the loading factors; the fifth computes the percentages for each class of service; and the last shows the distribution of the $62.28 expense to the various classes of service on this basis.

The "Originating Calls Basis" is a determination of the percentages which the total originating calls for each class of service are of the total originating calls of the New Richmond exchange.

TOLL APPORTIONMENT.

Before taking up the details of the first and second apportionments as have been outlined, it appears that some comment should be made upon the method to be used in connection with the "toll" apportionment. In arriving at the expenses which are properly chargeable to toll service, it will be assumed that the toll business should stand by itself, entirely independent of all expenses incident to the local traffic. Therefore, all expenses apportioning to the handling of toll calls—such as local operators' time devoted to such calls, a portion of all the expense items involved in the maintenance and operation of the local plant including part of the interest and depreciation—will be apportioned to toll and charged to that service.

This does not mean that we held that the rate for a toll message should carry all costs of the message from the originating to the terminating subscriber's station. There are two very different views regarding the expenses which should be covered by toll message charges. One of these is that the toll rate should cover the costs from the toll board at the originating exchange to the toll board at the terminating exchange, including the cost of keeping necessary toll records.

According to this view of the matter, the use of local exchange equipment for handling the message between the toll board and subscribers' premises is a part of the use of the exchange plant for local service and the cost of such service should be included in local rates. According to the other view of the matter, the toll service extends to subscriber's

premises. No part of it is to be regarded as exchange service, and the toll business should carry a portion of the exchange expenses because of its use of exchange equipment.

We are not prepared at this time to say which of these views is a correct one. There are many arguments for each of them. For the purposes of this case, however, an attempt has been made to separate toll from local expenses up to and including the subscriber's station, in order that we might have some means of determining what effect this method of handling toll business would have, were it to be adopted. Inasmuch as the matter of toll rates is not involved in this case, no changes in such rates being considered, all that the apportionment of toll expenses on the basis mentioned is intended for is to indicate what the results would be if that basis were to be finally accepted.

(To be Continued.)

The Telephone and Legislation.

This year's crop of government reports has shown no falling off, and it is to be supposed that Congress is sitting up nights digesting the voluminous aggregate. The telephone figures in many of these departmental statements, both directly and indirectly, and the discussion of this topic is covered from many interesting angles.

The report of the postmaster general contains the usual recommendations that early action be taken by Congress declaring a government monopoly over all utilities for the public transmission of intelligence. Telephone authorities are noting, however, that Mr. Burleson laid no special emphasis on this matter, as in the case of his first report. He believes that the telephone and telegraph systems of the United States should be incorporated into the postal establishment "as soon as practicable," a phraseology which is not interpreted as being particularly insistent. As the former reports pointed out, Mr. Burleson repeats, private ownership of telephone and telegraph utilities places in private hands the control of important vehicles for the transmission of intelligence, and, therefore, infringes upon the function reserved by the constitution to the national government. Operation of these facilities, he says, inherently as well as constitutionally belongs to the postal service.

While it is generally agreed that there can be no actual progress made toward the federalization of telephone and telegraph systems during the present Congress, largely because of the immense impracticability of the scheme at a time when $363,860,000 is being asked for army and navy expenses alone, the campaign against government ownership will probably go on as hitherto.

It is expected that Congressman Lewis will attempt to press his bill for the postalization of the wire systems, and this will, of course, call for refutation. That a campaign against the proposed legislation is being conducted is generally understood, although it is not exactly apparent as such. It is rather a campaign to educate the people to a realization of what they have in the way of telephone service, how it is supplied, at what expense of funds and constructive labor, and to an appreciation of what they have in contrast with the public in countries where the telephone is government owned. The arguments against Mr. Lewis' proposal have been numerous and exhaustive, but one of the most pertinent at a time like the present is that the sum involved by the absorption of the telephone and telegraph systems of the United States by the government, would be double the present national debt, unless it should be confiscatory.

The preparedness program at Washington affects telephone companies and telephone users in various ways. Telephone companies are affected by Secretary of the Treasury McAdoo's suggestions that the increased expenditures for national defense can be met in part by increasing the rate of taxation on corporate incomes. Telephone consumers are affected by his proposal that the war tax of last year, which included an assessment on telephone messages costing 15 cents and over, be continued.

The President, in his message to Congress, backed Mr. McAdoo in these suggestions. In a more general way the telephone as well as other businesses were referred to in the President's remarks, and references to the uncertainty as to what is in store for this country and the world in general when the great war ends, are not amiss in the matter of considering telephone financing for present and future requirements.

It is very evident from the reports presented by cabinet officers and other department heads this year that nothing very radical is planned in the way of business legislation. Just what is occupying the administration as regards business at this time is best expressed in the report of Secretary of Commerce Redfield.

He remarks that "unfair competition" is forbidden by law in domestic trade, and the Federal Trade Commission exists to determine the facts and to take steps to abate the evil wherever found. The door is still open, however, he declares, to "unfair competition" from abroad, which may seriously affect American industries for the worse. In short, the administration feels that there is a particular and unusual needs to guard American industries from the "dumping" of foreign goods here after the war, and to actively encourage steps being taken by American trade in foreign fields. These are the absorbing business questions of the moment.

In its annual report the Interstate Commerce Commission speaks briefly of the telephone and telegraph valuation work. The commission states that a section has been organized for the valuation of lines falling under the valuation act and that work has been begun. Five parties have been organized and are now in the field in each district, and a corresponding office force has been employed. These parties cover a total pole line mileage of approximately 6,000 miles per month. The commission says that it would be desirable to increase the number of these parties, but up to the present time it has not been possible to obtain the necessary pre-inventory information from the telegraph companies, which would make possible higher rate of progress. Neither the Western Union Telegraph Co. nor the Postal Telegraph-Cable Co. has definite information as to the location of the greater part of their lines, the commission states.

No field work has yet been done upon telephone lines, except those lines which are owned by railroads under valuation, and it is not in contemplation to begin telephone work proper until the telegraph work is further advanced.

In the estimates for appropriations at Washington, incidentally totaling the largest ever proposed in peace times in the history of the country, government ownership of telephone and telegraph service in Alaska, Porto Rico and Hawaii is proposed.

The Telephone, a Feature of Electrical Prosperity Week.

Various telephone companies throughout Kentucky participated generally in "Electrical Prosperity Week," as became electrical interests. At the Louisville celebration the Louisville Home Telephone & Telegraph Co. had rather an extensive display, emphasizing the extent and quality of the service supplied and the moderate cost. A map of the section, showing the area over which communication could be had by the Home system, was an interesting feature of the display.

In Memphis, Tenn., where, as generally, the celebration and demonstration were in charge of the Jovians, the Memphis Telephone Co. had an exhibit of the automatic telephone system which it is installing in one of the city's large mercantile establishments.

Digest of Telephone Articles in Various Publications

Prepared by Arthur Bessey Smith

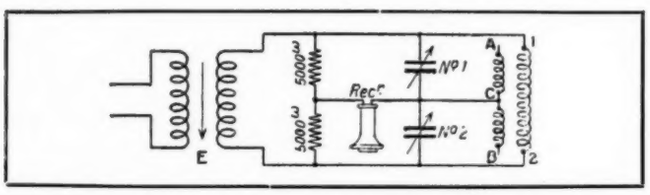
RESISTANCE OF CARBON CONTACTS IN THE SOLID BACK TRANSMITTER. Abstract from Physical Review, by A. L. Clark, The Electrician, July 16, 1915, pages 557-558; five curves, one drawing.

The writer draws attention to the astonishing regularity of the operation of a microphone transmitter in spite of the fact that it is a loose contact affair—usually considered to be erratic. He describes the structure of a transmitter of the closed cup, mica diaphragm type, and then relates the rise and fall of its resistance when current is first sent through it, as shown in the accompanying diagram. He attributes this phenomenon to heating and increase of pressure due to expansion of the granular carbon particles. The measurements were made by the voltmeter-ammeter method.

The effect of current on resistance is clearly brought out, the resistance rising and falling with the rise and fall of current. He draws the conclusion that the solid back transmitter is a partly conservative system—anything which causes an increase in current is met by an increase of resistance which tends to cut down the current, and vice versa. The effect of a gas placed in the transmitter cell was shown to be considerable, oxygen causing the resistance curve to rise much more rapidly than air. All but a few tests were made with the transmitter quiet.

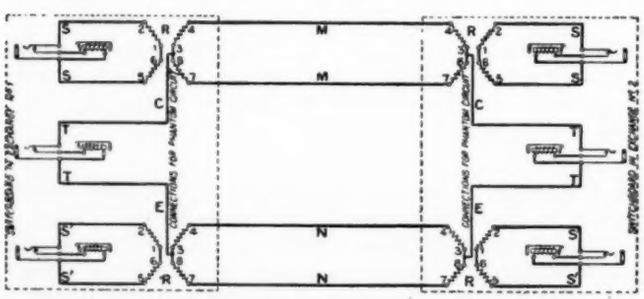
SUPERIMPOSED OR "PHANTOM" TELEPHONE CIRCUITS. The Electrician (London), October 22, 1915, pages 99-102; 13 circuit diagrams, one photograph.

This article describes the principles of phantom circuits using both repeating coils and impedance coils, drawing attention to



Repeating Coil Under Test for Out-of-Balance Capacity.

several applications. The use of composite telegraph on the phantom is illustrated, whereby it is possible to obtain three telephone conversations and four telegraph messages over the four wires simultaneously, the telegraph being worked duplex. The repeating coils for this work are described, with their

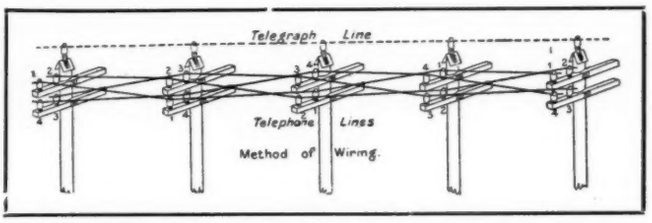


Phantom Circuit for Magneto Lines Connecting Two Exchanges.

necessary qualifications, which are as follows: Perfect electrical balance, high efficiency for talking and ringing, low ohmic resistance, and high insulation between the windings.

A comparison is made between the two coils made by the Western Electric Co. for this work. The British post office tests for repeating coils for phantom work are described at length, with good, clear circuits. These tests are as follows: Test for winding polarity, capacitance equality, effective resistance balance, impedance balance, power efficiency, and insulation. Not less than 55 per cent. efficiency is acceptable.

SUPERIMPOSED OR "PHANTOM" TELEPHONE CIRCUITS. The Electrician (London) October 29, 1915, pages 117-120, 7 drawings, one table. (Concluded from issue of October 22, page 102.)



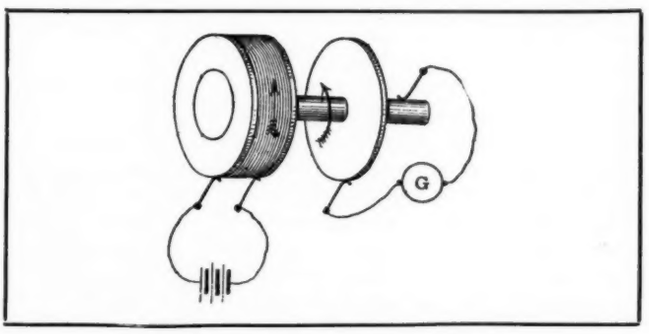
British Aerial Line Transposition to Eliminate Inductance.

This article discusses the essential line conditions for obtaining good phantom circuits (good balance as to resistance, insulation, and capacitance.) Transpositions form the main part of this chapter. The British post office method of revolving the four wires is described and illustrated (Fig. 15). The American and Continental practice of transposing the phantom circuit with four types of transposition is also given attention.

Of interest is the post office mode of constructing cables for phantom working (multiple twin cable), by using a number of cores of 2, 4, 8, or 16 wires, formed by successive twinning operations. The twist or "lay" differs in the different pairs, and a color code enables the pairs to be distinguished. Submarine cable is also made for phantom work. The article concludes with comparative cost figures.

SOME PROBLEMS OF ELECTROMAGNETIC INDUCTION, by Prof. G. W. O. Howe, D. S. C. The Electrician (London) November 5, 1915. Pages 169-172, nine drawings.

In a very interesting way the writer takes up such questions as these: Does the magnetic field produced by a solenoid revolve with it when the solenoid is revolved on its axis?



Stationary Coil and Rotating Disk.

Where is the mechanical reaction exerted which opposes the driving torque when current is taken from a disk rotating near the end of a solenoid? Does the field of a bar magnet rotate when the magnet is rotated about its axis?

These are discussed by the aid of clearly arranged diagrams. Poincaire's problem in unipolar induction in which the rotating body is an insulator, is given attention. The article closes with a discussion of the conceptions of induced electromotive force, the cutting of lines of force or the change of flux through the circuit.

Reference Poincaire in L'Eclairage Electrique, Vol. XXIII, (1900) page 41.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties—Prepared Under the General Supervision of Stanley R. Edwards—Part I, Telephone Economics, by James H. Shoemaker, Completed June 26, 1915—Part II, The Corporate Telephone Organization, by J. C. Kelsey and S. R. Edwards, Completed September 25 Part III, Telephone Accounting and Auditing, Written by James H. Shoemaker

Quiz Questions on the Preceding Installment.

78. What is the distinction between a stock record and a stores record?

79. State two points which should be clearly understood relative to the dividing line between construction and repairs.

80. Why should an estimate of the cost of extensions be made before going ahead with the work?

81. What provision should be made in the accounting scheme?

82. Outline several methods of procedure as to material used and work reports.

83. What distinction is made between efficiency and sufficiency as regards the person in charge of the books of a telephone company? Give the reasons for such a distincfion.

84. What was the idea of efficiency of the directors of one medium-sized telephone company?

85. Outline the causes leading to the awakening of the directors of this company.

86. How may sufficiency as distinguished from efficiency be shown?

CHAPTER VIII. Cost Accounting.

87. *The Cost of Cost Accounting.*—One of the first things to be determined in cost accounting is this: Into how minute details can the keeping of costs be carried to advantage? The author has always answered that question to his own satisfaction in these words: "No detail of cost accounting should be obtained if the securing of the information is more expensive than the economy that may be obtained thereby."

It is not good accounting to "get out figures" merely to satisfy one's curiosity. Where the owner of a plant is the manager, troubleman and bookkeeper, it is hardly as necessary to know what percentage of the month's expenses cover bookkeeping, trouble-clearing and executive management as where there are two at work on the books, three or four men busy all the time on line work and one man devoting practically all his time to business management. Nevertheless, there is some value in being able to say to the public that so much of each dollar received by the company goes for taxes, so much for the wages of the operators in the "central," so much for putting in and taking out telephones during the month or year, so much for renewals, repairs, etc.

Unless one has a more or less definite plan, which is applied to each day's outgo of funds, he is apt to become tremendously embarrassed if an expert, with a broad basic experience "gets after him" in a rate case or other public investigation—where figures thus used must be backed up with facts in detail.

88. *Objects of Cost Accounting.*—For the owner of a telephone system, and for a commission which is responsible for regulating telephone systems, the object of securing "Unit Costs of Operation" is to make sure that there are no unnecessary extravagances or leaks. It is one of the first objects, therefore, to establish for each separate unit, a standard cost or a maximum and a minimum figure. Hence, one of the first things to be done, when considering the matter of cost accounting, is this: Make sure that there is a definite conclusion as to the exact information that is wanted.

In this connection, it should be kept in mind that unless costs are accurate they are sure to be worse than valueless. Costs are invariably used as guides. If they are erroneous, they misguide everyone who uses them. It is almost sure to bring expensive and unsatisfactory results, if reliance is placed in any cost system which is not "tied in" with the figures of the balance sheet.

Ask ten managers of medium-sized companies what it costs them per unit to do any or all of the jobs which must be done for the operation of their plants. It will probably be found that a majority of them have never attempted to find out in a definite way whether or not any of their activities might be more economically accomplished.

89. *Difficulties of Cost Accounting.*—At two recent conferences of managers of medium-sized companies, the author asked these two questions:

What have you done, thus far, in the matter of cost accounting?

Do you feel the need of a more definite system of unit costs when it comes to dealing with your commissions?

In every case the reply was, that much remained to be done to make the actual practice fully satisfactory.

In one instance, a request was made for authority from a commission to revise rates. The expert of the commission spent two days with a company having $50,000 invested, but was unable to get the kind of information he wanted—from the company's books. Finally, he gave up in despair. In reporting to the commission, he recommended that the company be required to keep its books in such manner for at least a year, as to enable the securing of certain reliable unit costs, before further attention be given to the matter.

It is going to be more or less difficult for that company to inaugurate a thoroughly reliable system of bookkeeping. There are not very many of the medium-sized companies which have men in their employ capable of applying to the actual experiences of every day, the principles laid down in print.

90. *Cost Keeping a Gradual Evolution.*—In the author's own experience, it seemed impossible to get a system of work reports and "material used" reports established in practice until months of educational effort had been devoted to everybody, from the lineman to the auditor's chief assistant. The managers at the two recent conferences, just mentioned, seem to be having similar experiences. They suggested this idea:

Let a group of Class C companies agree to a sort of correspondence school, all their own. As the larger companies have a central authority which passes upon every perplexity which comes up to the man on the ground, let one of the accountants of their number be named as chairman and let every perplexity be referred to him. When he decides that matter, let him send a carbon copy of his decision to the accounting officer of every other company. If all agree, the chairman's decision rests approved. If a majority are against him, they may refer the matter to a friendly larger company to find out what the practice of that company happens to be. If there is still disagreement, they may seek the opinion of the commission's expert. Even then, any one of the group is at liberty to go ahead and follow his own inclination, taking his own chance as to that course satisfying the commission.

The plan has at least one commendable feature. It provides assistance for the man who really wants to master the subject. It is a stimulus for study. It gains for each the opinions of all.

91. *The Chief Requirement for Successful Cost Accounting.*—Unless one can be led to really desire a knowledge of the unit costs of the business covered by his own accounts, it would be foolishness to expect him to do any home study course reading concerning the matter.

The author attempted to put into suitable language some of the more important details of cost accounting, but found no suitable language at his command for that purpose. Therefore, in dealing with "accounting sufficiency" and with "cost accounting," it has been attempted merely to indicate the possibilities and simulate a determination upon the part of as many as possible to devote the study that may be required to become a master rather than a slave of the calling.

(*To be Continued*)

Preparedness an Insurance Against Deprivation

Telephone Industry a Pulse—Warning Against too Great Expansion of Business Until War Ends—The Navy an Instrument of Defense and Not of Militarism—Address at First Banquet of United States Independent Telephone Association

By Ex-President William Howard Taft

[Editor's Note: The address of ex-President Taft at the banquet during the national convention last week contains much that is of interest to telephone men. The note of warning which he sounded against overdoing as a result of the present influx of business due to the great war is timely. The arguments advanced in favor of preparedness are practical and to the point. It is for these reasons that the speech is published in full.]

I am glad to be with you. I am glad to be with men who are facilitating communication between men and women.

It is a pleasure to look into your faces and see that you are all young men. Of course the women are always young, but I mean the men are young. You represent something new. I am old enough to have gone back to a time when there were no telephones. I suppose you cannot recollect it.

But really one of the things about a telephone that impresses me every time I think of it, is the ease with which we accustom ourselves to luxury. The new invention of the improved conveniences of life—that we never dreamed of and therefore that it was entirely possible to live pleasantly without—when introduced into our lives and after we have it for two or three years, we grow accustomed to.

Competition reduces the price and then it becomes essential to us. If we lose it, we are deprived of something that is in the nature of a constitutional right which we ought to enjoy. Everybody ought to have a telephone. Everybody without a telephone in some way or other does not enjoy due process of law under the constitution.

You are affected by business considerations, I suppose, intimately. You come close to the people. You know when they are short and when they are not. You are a kind of a pulse and can tell.

The present time is looking better. We are feeling prosperity. Things are beginning to move. I wish I could think that they are moving forward on a permanent basis that justifies our going ahead without some degree of care and anxiety. I feel as if our present prosperity was prosperity at the expense of a great many millions of people on the other side; that this increase in business which we are having is of that feverish character which is not altogether healthy. We have no right not to take over that which circumstance has given to us in a legitimate way, but do not let us lose ourselves in the thought that we ought not to be careful.

We are a very hopeful, optimistic people. That is what makes us so successful. But sometimes we overdo optimism. Sometimes it leads us into investments and into a gambling spirit that ultimately we have to pay the cost of.

Claims of Capital and Labor.

This is the greatest war in the history of the world. In this war there has been exhausted almost the entire capital that has been accumulating since the days of the Napoleonic wars. Every great war has resulted in increasing the rate of interest. Capital has become more valuable and so the part that it claims of the joint product of itself and labor and other elements that enter into production becomes greater. As the price that is received is not determined by the cost of production but by demand and supply and is independent, in a sense, of the cost of production, if one element grows large it is apt to affect other elements to their detriment, and therefore to have a pressure and a tendency to reduce the other elements that enter into the cost of production.

If that be true, then we are in for a readjustment as to the comparative amount that capital shall claim and that labor shall claim and that other elements shall claim. That may lead to a difficulty that always mars business.

I understand there are a good many who think they can go on because they have contracts that last beyond the war several years. Well, I am no business man, I am not a credit man of any concern, but when this war ends, with the enormous debts that these governments have existing—beyond anything ever in history—I would not declare a dividend on the part which is to

be done in those contracts after the war ends and after the necessity for the contract has ceased to exist.

Now we are very strong. Money has come to us. Of course we must look forward to this: We have increased in this country in material wealth. We have expanded because capital has been cheap. And capital has been cheap because Europe has furnished us a great deal of it. Now in this enormous balance of trade that we are having in our favor there are coming back to us a great many of our securities and the money we are making is going into those securities. We are taking them over and we are owning the things that we are running here.

In one sense that seems to be a good thing. It makes us independent. But the life of our country depends upon a continued normal expansion. Heretofore we have expanded in a normal way and we have done it through the benefit of this foreign capital. Now we have to paddle our own canoe and it is going to make a considerable difference.

All these things I think ought to be taken into consideration in influencing the action of each man in business, so that he will just reef a little bit of sail until we have passed the critical time when the war shall end, when stop orders shall come over, and when a change in the relations between labor and capital is bound to come.

It is all right and I commend the demands of labor that they shall share in these enormous profits that our ammunition makers and our war supply makers are securing. It is right that the wage earner should have his share. But the trouble about it is that it is a little bit under the influence of the trades unions and their leaders. It is a little bit like a ratchet wheel. When you get the price of labor up, it is very hard to have it go back again on the readjustment.

All these things suggest themselves as reasons why we should hold ourselves in and not let too loose in our expressions of joy over the business conditions and in our policy as to what we shall do until the conditions become more permanent.

How long this war is going to last nobody can tell. When a nation has its back to the wall, it can last a long time beyond what economists will figure out it ought to last. We knew that in our contest with the Confederacy, we had them sealed up, we had their ports blockaded, they did not have any manufactures, they did not have anything—and yet they continued on for four years. They made their powder and they got their guns in some way. So they continued until almost the last man was deprived of everything. If that same spirit manifests itself in Europe, then it is ending by exhaustion, and that means a continuance to a point that I do not like to contemplate.

Lessons Taught by the Great War.

I think our experience in this last year and a half ought to teach us some lessons. We have had a complacency in respect to our situation of isolation that nobody could attack us. We were here across the sea. We could go on making money while other people were fighting. But I think we have had a rude awakening about that.

It seems to me that the headlines we see every morning, with the statements that we are issuing an ultimatum to this country and to that, are evidence that we are pretty close home to war. War is not on us and I hope we can escape it. I believe the whole country is against it—well, I won't say the whole country, because that includes a good many people, but I mean the great body of the people are against war and wish to keep out of it—yet we are sufficiently near it to make us as business men, men who have a great interest in something we want to preserve, reflect.

You have a house. You take every precaution to prevent fire. You think you have taken every precaution, that you are so situated that fire cannot occur. Yet if you are a reasonable business man, it is sufficiently possible that you spend the money for insurance so that if it does occur you shall be in a position to resume your business and rebuild your factory and go on with new energy.

We have been here 125 years, indeed, more than that, 250 years. We have built up a civilization that we think is worth preserving. We have built up a country under popular government which we think is something that the world has not seen in other countries. Now if that is worth something to us, if that is of inestimable value, as it ought to be, isn't it our duty to take reasonable precautions to see that nobody can deprive us of that inestimable value?

Militarism Impossible in This Country.

It is not essential that we should become a military government. Militarism in this country is practically impossible. It is against the spirit of the people. You could not have conscription in time of peace in this country—we had a row when we had a draft in time of war—and without conscription, you cannot raise an army of any formidable character. Why, we have difficulty enough in recruiting the army as it is. You have seen those signs around on the fences, of the attractive foreign trips that you can take if you are a soldier, and the sailors with their cameras are taking the mosques of the Orient, and all that sort of thing. These signs are held out, those advertisements are held out, to attract recruits. Do you suppose the government would spend that money—it costs money to advertise—do you think the government would spend that money, if it was not necessary to make attractive that service, if people were coming in tendering their services and would constitute good soldiers? No.

In good times it is the hardest thing possible to recruit our army up to the 80,000 that the president has now fixed for the army. Does not that show that there is very great difficulty? We pay our soldiers $15 a month. We give them the best accommodation that any army in the world gets, and they have a power with that $15 a month to save more than is saved by a good many wage earners, because they have so few expenses. But if times are good, it is hard to recruit even 80,000. Now, suppose we wished a half million men and wanted to raise them by volunteers. Why if we did, we would have to treble our pay and that would make the raising of an army almost prohibitory. So that you see we are not in a position to become a military government.

They pay sailors better than they do soldiers and they only need a comparatively small personnel as compared with a great army. A navy we can enlarge. We can make it as we ought to make it—the equal of any nation that has a standing army, that might land a standing army within a month on our shores. Nobody ever heard that a navy was an instrument for oppression. You look into your constitution and you do not find any restrictions on the navy.

There is the constitutional provision that you cannot appropriate money. Congress cannot appropriate money, for longer than two years for the support of an army. There is no such restriction as to a navy. Then there is the question of quartering an army that is restricted in the constitution, as to personal rights of a citizen of the United States, a resident of the United States.

All that looks to the possible tyranny through an army, possible depotism through an army, through the man on horseback; but you find no provision with respect to a navy. And why not? Because a navy was never used and cannot be used, in its nature, to oppress people. It is not an instrument of militarism as long as you do not have a great army with which you can conduct a conquest.

A navy is for the purpose of defense unless you have an army that it can convoy in order to create a conquest. No Napoleon ever lived on a navy. He had to have a great army and the navy was only an auxiliary. If you have a great navy, and a properly great navy, it is only an instrument of defense. That is my own impression if we have a great navy as we ought to

have. We would have had it if we had carried out the plan made by the navy commission in 1902. We would have kept up with the nation with the greatest navy now with a standing army—that is Germany—but we fell aside.

We are a very complacent people. Sometimes I think we are like that man who doesn't care what happens so long as it doesn't happen to him. We do not take into consideration what may happen to us and so we let it fall behind. Now it is about 33 per cent. behind and we ought to go on and increase it.

Why a Strong Navy is Needed.

We need the navy in order to make it impossible for a country with a navy equal to ours, to land any military force on our shores. No nation will risk 300,000 or 400,000 men on the sea as long as we have a navy equal to theirs, because the expeditionary forces must not be carried in naval vessels. There is not room enough in a naval vessel. They must be carried on unarmed transports.

When they are carried on unarmed transports and there is a navy opposing them with submarines and torpedoes, they can have a fight, of course. But the danger of disposing of the convoy and then attacking and sinking that 300,000 or 400,000 men would be such that no nation would undertake it until they had crippled our navy or swept it off the seas. Therefore, what we want to do first is to get a navy, because that is the first instrument to enable us to make use of the isolation that we have in the separation by the Atlantic ocean from Europe and the separation by the Pacific ocean from Asia.

Unless we do have some such instrument to enable us to avail ourselves of that separation, the ocean instead of being an obstruction to attack and military aggression upon us, is an accommodation. It is a great deal easier to reach us with a force across the ocean, if there is nobody to oppose, than if there was land between, and the ocean, instead of being a defense, becomes a means of offense by our enemies. But when we have a navy that is equal to meeting the navy of any one likely to come over, then we are in a position to deal on an equality with them. With an American navy equal to that of any other government, we can count on its giving a good account of itself and keeping away an army until there is time enough for us to improve the skeleton of an army that we would have here and raise the 500,000 men that the military strategists say is necessary for us to make a defense against a military expedition.

Now you think I am talking war. Well, I am a layman. I do not know much about war, but I was four years at the head of the war department, and had to look into the subject then. I concur with the President in many of his recommendations as to what ought to be done. He advocates the increase in the navy, and then he advocates a change in respect to the reserves of the regular army. I think he advocates an increase of the army to 130,000. Well I would put it in a little different way, but it is substantially the same.

There is a mobile army and a coast artillery. I would make the coast artillery 100,000 men and make that the limit in the way of coast artillery men and all other services, except the infantry, the cavalry and the field artillery. That is the mobile army. That is the army that moves about.

The coast artillery is attached to the coast fortifications. The coast fortifications are for the purpose of protecting cities and the harbors there, for the purpose of enabling the navy to conduct an offensive, to go out and meet the enemy and not feel that it has got to stay around the shore and defend our cities.

Those coast fortifications are as good as any in the world. They need some ammunition. They may need a few 16-inch guns. We have spent a great many hundreds of millions of dollars—I won't say a great many hundreds of millions of dollars, but several hundreds of millions of dollars—on them. Today, with the exception of a fort at Cape Henry and Cape Charles, where they are now building one, we have a complete defense of coast fortifications for any purpose that coast fortifications can serve.

People talk about coast fortifications as if it were necessary to have a gun every mile down the coast. If that were so we would not do anything but spend money in building. Just think of the thousands and thousands and thousands of miles of coast we have. That is not what a coast fortification is for. It is not to keep a military expedition from landing on a shore. It is there for the purpose of protecting those points, good harbors and cities, against the invasion of a naval force, not an army force, but a naval force. A navy might slip by our navy and then come into a city and put it under ransom. This is for the purpose of keeping them off, and they can keep off any naval force that now sails the ocean.

We have had a good deal of talk about their inefficiency in the matter of range. Why, in the Dardanelles they only had ten-inch guns, and they had against them, with the Queen Elizabeth and the other vessels of the English and French navy, the strongest naval armament that was ever gathered together in the world. They tried for twelve days or more to blow them up. Well, they gave it up, didn't they? They were never able to get into the Dardanelles. They sneaked in a little bit and then they sneaked out.

Coast fortifications of any adequate size can always resist a naval attack. A naval attack is not adapted for that purpose. I say this:

We could count on resisting any naval attack upon our cities, because our coast fortifications are sufficient. What we need is a navy that, leaving our coast, can go off to attack and prevent the coming of a military force, which, of course, could land on our shore, if there was not a navy to protect it—just as we did at Santiago. That is to be expected, and that is what the navy is to prevent.

An Army for Defense.

With respect to the army, as I understand it, it is expected that this year 100,000 shall be enlisted for three years—one year with the colors, when they are trained, and two years in the reserve. Then next year enlist another 100,000 and train them; next year another 100,000. Then we will have 100,000 with the colors and in active service, and 200,000 in reserve, so that if the exigency arises they may be called, and we will have 300,000 regular soldiers. Then we have 125,000 militia and the raising of the 75,000 by volunteers, if we have enough officers, is all we need to make the 500,000 that is desired.

Now they propose to have continental soldiers. I do not agree with that. In fact, I think that the danger of attempting to train a volunteer force that shall exercise two months in every year is that we may interfere with the national guard—the militia. I think after the exuberance of the enthusiasm of military business shall pass away, that they will not come in again and they will not volunteer, so that we will not have a permanent force as we have with the militia. That, however, is an opinion. If Congress sees fit to try it, we can try it and be disappointed, as we have in other attempts to make reserves, and so on.

But I think there is an agreement that we ought to increase the navy to the point I speak of, and that we should have an adequate force at home of this character. Of course there are estimates as to what we ought to have that it seems to me are excessive and are unnecessary.

What we ought to do is to aim at something practical. If we say that we need a million and a half or two millions of men because they have so many millions on the other

side, and then we study the possibility of getting them, we will tire the people with the idea, and they will just sit back and take the chances. That is what they will do.

If we propose something that is utterly impracticable, it will be just like that old darkey who was talking to his master and asked him:

"Massa, how many people do you think are going to be saved? Do you think a half will be saved?"

"No," he said, "I don't think a half. Oh, no." He knew all the people around there, and he didn't think a half would be saved.

"Well, would a quarter be saved?" No, he didn't think a quarter.

"Well, would an eighth?" He was not so certain about it.

"How about a sixteenth?" He couldn't say.

"Well," said the old darkey, "if that is the case, then there is no use bothering about it."

And that is what people will say if you are going to insist on the raising of a great force which it is impossible to raise in this country except by conscription, and you cannot have conscription that will be popular in this country or allow a party to live that proposes it and enforces it on the people. That is the truth of it. We might as well face it.

In the exigency of war we can do anything with the American people. But in the time of peace you have to be practical in dealing with them, and you must show them before they will act in respect to the military increase. Now, let us offer to them what is reasonable, and not insist on something that we cannot do, and then not succeed in doing anything.

Central Home Operators' Meeting at Marion, Ky.

Meeting of Officials, District and Branch Managers and Operators of Central and Western Districts of the Central Home Telephone & Telegraph Co., at Marion, Ky.—Discussion of Practical Problems Encountered by Operators and Managers

Forty officials, district and branch managers, operators and representatives of connecting companies made up the total present at the operators' meeting recently held at Marion, Ky., where the Central Home Telephone & Telegraph Co. recently installed a new Stromberg-Carlson switchboard. It was, strictly speaking, a meeting of the operators of the central and western districts of the company and was held at Marion by way of celebration of the improvements there. Fifteen towns were represented and the meeting was given over to discussion of practical problems which are encountered constantly by operators and managers.

This was managed on the plan which B. Y. Chambers, assistant superintendent of the company, and in charge of the work, has adopted, of extending the benefits derived so as to be shared by representatives of companies which connect with the Central Home, although they are not affiliated with it, a mutually beneficial plan. Several such companies were represented and joined in the meeting with close interest.

Justice T. J. Nunn, associate justice of the Court of Appeals of Kentucky, who is a resident of Marion, delivered the address of welcome to the delegates to the meeting, response being made by H. J. Jeffery, of Paducah, district manager for the Central Home. The visitors in the city were taken over the plant where the new and improved features were explained to them, after which they proceeded to the assembly room of the Marion Methodist church.

General Discussions of Particular Interest.

The business sessions of the convention were especially interesting from the viewpoint of general discussion. At the conclusion of each of the papers read, some of those present asked for further information or related experiences in line with statements made and, generally, there was an exchange of opinions and ideas which should bear fruit. Mr. Chambers turned the meeting over to the others pretty largely, himself making a talk on the relations of employes of a telephone company to the public they serve. He emphasized the essentially individual aspect of this relationship, pointing out that patrons of a telephone company are likely to get their impressions of the company from their intercourse with one of its employes. He elaborated on this phase of his subject and gave a list of practical points which would go a long ways toward promoting individual, and through that, system efficiency.

Two branch managers were represented on this program. One was H. P. Myers, manager of the Bowling Green Home Telephone Co., who spoke somewhat along the lines of Mr. Chambers' address, having for his subject "Public Service Employes." In the course of his talk, Mr. Myers said:

"The employes of a telephone company who come in closest touch with the public are the operators, and three important things are expected from the operators by the public. These are promptness, patience and politeness, and I am glad to say that it is a rare thing when the operators fail in these respects. . . . . It is through them that the company is most often judged, but they are only a part of the whole. When we look carefully into the relations of all of us to the people who use our service, we can see that the manager, cashier, plant men can all do something to convince the public that we, as public service employes, want to give them a square deal. It's the desire of the telephone company to give good service, and a part of good service is courtesy, which the company can supply through its employes.

If the employes, who are often appealed to with grievances which may or may not be due to anything within their power to control, will sympathize with the subscribers' grievances and put themselves in the position of the subscribers, they in most cases can satisfy them. In other words, the employe must recognize that a subscriber has a complaint. It may be real or it may be imaginary, but to tell him that he has no grievance and that our service is good, is the best possible way not to make friends for the company."

Bowling Green was also heard from through Miss Dorris Duncan, chief operator, who treated the subject, "Proper Way of Handling Reversed Calls." She made the statement that not many operators handled such a call so that the cashier could get the desired information without making further inquiries.

"Upon receiving a call which the subscriber requests be reversed," she said, "the toll operator should record the party's name calling and the name of the party called, and in passing the call to the distant office should handle it in the following manner: 'Bowling Green a reversed call,' and first of all 'Reversed' should be stamped on the face of the ticket, then the ticket number, the calling party and

the party called. In so doing the call is received properly and handled in the distant office in the same way."

C. L. Obinchain, manager of the Russellville Home Telephone Co., dealt with "The Personal Element in Serving the Public." "In the operation of manual telephone switchboards," he said, "it is essential that the operators develop the personal element to the highest degree possible, for the reason that telephone operating is, from its unique nature, radically different from any other line of enterprise. It is a business in which the officials and heads of the various departments rarely come in contact with the general public, and never in the daily use of subscribers' stations.

Another thing to be considered is the fact that the patrons cannot see those who serve them. This accounts, in a large measure, for the misunderstandings that arise, which would not be the case could the subscriber stand on the opposite side of the counter and see for himself just what the clerk's (operator's) facilities are and what efforts she is making to give him service. Since it seems that this condition will never be overcome it will have to be met by those who operate switchboards, and the best qualified operator will be the operator who has a personality that is pleasing to those she serves."

"The Efficient Employe" received some pointed attention in a paper read by Miss Maude M. Jarboe, chief operator of the Owensboro Home Telephone Co. "Money can be saved, efforts conserved and revenues increased by keeping up the efficiency of our force. Poor operating gives the best opportunities to those who are dilatory in paying their telephone bills for making excuses as follows: 'I don't get any service;' 'I can't get central; when I do I have to wait ten or fifteen minutes;' 'I get disconnected;' 'I get the wrong number,' etc., all of which reflect on the efficiency of the operating force. . . . . The public is principally interested in the results, but we are vitally interested in how to get results. . . . . We must have an efficient organization, one without lost motion. . . . . Get the entire force to work, improving the efficiency of our organization. This done the service improves, collections increase, and subscribers will be better satisfied and we, ourselves, will become pleased with our work."

Avoidance of Circuit Delays.

Miss Bernadette Hill, toll and assistant chief operator, at Owensboro, took up in a practical way the question of "How to Avoid Delays on Circuit No. 2," which connects Louisville and the western Kentucky towns along the river. "When we sift the matter down," she said, "it is plain to me that most all of the trouble we have is caused by a lack of co-operation. I wish to assure you that the Owensboro toll operators are anxious to eliminate this feature and if we can have the assistance of all the other long-distance operators along the line our difficulties will decrease and the pleasures in our work will increase."

"Pacifying the Public," was the suggestive title of a paper presented by Miss Alzadah Stewart, chief operator of the Paducah Home Telephone & Telegraph Co. First of all she emphasized the advantages to be gained through getting acquainted. The public, she thought, ought to know the operators and something about how they work, while the operators should make a study of the public they serve. After that, courtesy, cheerfulness and perseverance will do the rest," she insisted.

"Give yourself, your interest, enthusiasm and personality to your public," she urged, "and you will find that, just as a mirror reflects your image, thus will your good qualities be reflected back by those with whom you deal, and your public will be pacified."

"My Position—Girls in Other Positions" gave Miss Ruby McCollum, toll operator of Paducah, an opportunity to tell of her work in the Paducah office. "Things I See That Can Be Done to Improve Toll Operating" was the subject of a practical paper which was read by Miss C. L. Stephenson, chief operator of the Marion exchange. Team work was the theme of her argument. "Team work," she said, "is essential before great progress can be made. Be certain to start a call right, and it generally reaches the desired person and place in the shortest space of time, giving practical suggestions to this end. There is no use to discuss carelessness. It is not to be tolerated. It is the opposite of everything desirable to increase co-operation and efficiency." Another interesting paper on night operating was read by Miss Emma Davenport, chief operator at Mayfield.

Present at the meeting, in addition to those who have been named, were: Miss Willie Stephenson, Miss Mayme Bryant, Miss Mattie Moore, Mrs. Shuttleworth, Miss Ruth Driver, Miss Nelle Paris, Mrs. P. B. Adams, Miss May Cook, G. W. Fowler, E. J. Hard, Sampson Wilson, of Marion; Mr. Sheppard, Tolu, Ky.; Heywood Williams, Providence; E. L. Isaacs, Madisonville; C. P. Short, Taswell English, Owensboro; Rev. J. A. Chandler, Marion; Miss Louise Frey, Mayfield; Virt Kimbro, Bowling Green; Miss Olga Coffman, Russellville; Miss Ella Pryor, Paducah; Miss Ray Cunningham, Smithland; Miss May Ramage, Providence; Miss Frankie Gardner, Clay; Miss Mary Denton, Miss Fannie Shaw, Henderson, Ky.; Miss Edna Monroe and Mrs. Charles Monroe, Salem, Ky.

Tunnel Used by Telephone Company.

Huntington, Ind., is well remembered by telephone engineers and construction men who have worked there, as the town with the big tunnel.

Flint Creek, a modest, rippling stream, years ago wound its way from the northeastern boundary of the city to the Wabash River. But as the city grew in size, the gradual encroachment of city real estate upon the creek banks demanded the elimination of the winding stream. To accomplish this for all time, a huge tunnel of heavy masonry was constructed across the city and the waters of the creek were deeply buried beneath the city streets and buildings.

The tunnel is large enough to drive a touring car through. During the floods of 1913, the water scarcely reached the keystone of the arch. Through this tunnel the main backbone of the United Telephone Co.'s underground cable system is carried.

A new entrance into the tunnel, immediately to the rear of the new telephone building, has just been completed. The entrance was made in a thoroughly up-to-date fashion, with ample provision to handle the ultimate requirements of the new exchange about to be installed.

Through the side wall of the tunnel, near its top, an opening large enough to allow workmen to pass through was made, and over this opening a rectangular-shaped brick manhole has been constructed. From the manhole a number of ducts lead directly into the cable vault in the basement of the telephone building.

The manhole is designed to greatly facilitate the work of carrying underground cables from the tunnel into the building, with due regard to the placing of additional cables in the future.

Telephone Improvements and Extensions at Monroe, Wis.

The United Telephone Co. is keeping in the lead in the matter of improvements in Monroe and vicinity and is installing an additional section of switchboard which will increase the capacity to 1,440 local lines, besides the rural and toll lines. The local exchange now has a total of 1,171 telephone. The Monroe exchange is said to be one of the few in the country which gives all patrons a single party line.

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

254. Why is it not safe to assume that drops or signals having the same ohmic resistance are alike in all their other properties? What is the important item to know relative to the value of the design?

255. What is another important aspect to be considered in the design? What should be remembered as to drop resistance?

256. Outline the causes for the different effect of the same line conditions on common battery line relays and target signals from their effect on magneto equipment.

257. Cite some instances of false signals in common battery systems, due to line conditions.

258. Name some of the various types of common battery relays.

259. What is the line relay? What was the essential consideration in the early designs of this kind of relay?

CHAPTER XII. The Central Office (Continued).

260. *The essential features in relay design.*—One of the most useful concepts of the common battery relay is that of a circuit controlling switch operated magnetically. If the relay is considered in this way, it will be easy to arrive at a statement of those points that are essential in its operation. As a *switch* the relay must close or open those circuits connected to it in a positive and reliable way. In other words, the contact points that are to be placed in contact by the action of the relay must be pressed together with certainty and with sufficient pressure to insure that the desired electrical contact between them is perfect.

When a circuit is to be broken by the relay, it must separate the contact points quickly and positively to prevent any continuance of the current in the local circuit after its operation. In automatic equipment, the prompt and clean making or breaking of a given circuit by means of relay contact springs is often absolutely essential to the operation of the apparatus.

In order to insure the most *economical* operation of any relay, it must be so designed that, while performing its functions in the circuit properly, it will have the lowest possible magnetic reluctance. To accomplish this, the *air gap* in the magnetic circuit must be as short as possible. It is true, as has been shown in earlier sections, that by far the greater part of the ampere turns in the winding of any electromagnet is required to overcome the high reluctance of the air gap.

A very small proportion of the total ampere turns is required to create the necessary flux through the iron portions of the magnetic circuit. If then, the air gap is shortened, the effect of the ampere turns of the winding in building up a magnetic field in the frame, core, armature and air gap of the relay, is increased. To view the matter in another light, the shorter air gap insures the production of the same magnetic attraction between the armature and core with smaller expenditure of energy in the form of battery current. This is because reduced

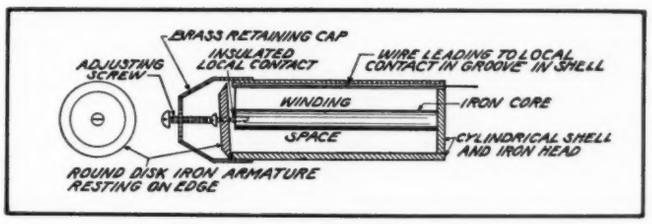


Fig. 107. Torpedo Type Relay, Now Obsolete.

reluctance due to a shorter air gap reduces the magnetizing force required. It is possible to make the winding of higher resistance and this means that the draft on the central office battery for that particular relay, will be less than would otherwise be the case. Therefore, it is always desirable to operate any telephone relay with as short an air gap as other conditions will permit.

261. *Causes of change from early relay design.*—In the "torpedo" type relay shown in Fig. 107, the general magnetic structure is about as good as it is possible to make it. Owing to the cylindrical shell, it is practically free from any stray external magnetic field. The adverse criticism of this type must be made on mechanical design rather than electrical. Since the insulated contact by which the local circuit of the relay is closed in operation, is placed at the exact center of the core and circular disk armature, it is necessary to allow the armature with the contact point, to fall back some distance when the relay is de-energized. Otherwise it would not be possible to insure a sufficiently wide break in the local circuit of the relay at the contact.

This means, in effect, that the *air gap* in this type relay must be made much longer than would be desirable from an electrical and magnetic standpoint. We might expect, accordingly, to find that this type of relay required a rather heavy expenditure of current to insure its operation. As a matter of fact, this is true. The relay, when first placed in service, was wound with comparatively large wire to a rather low resistance.

An arrangement by which it is possible to provide for a short air gap and at the same time lengthen the distance through which the moving contact points travel when the relay is operated, is an improvement on this relay and in accord with modern standards.

262. *Improvement of torpedo type of relay.*—The manufac-

turing company that originally produced the "torpedo" type of relay shown in Fig. 107 has changed the mechanical design of its standard and arranged the contact points at the top of the armature as shown in Fig. 108. By this change the travel of the moving contact points is made *greater* than the average distance of travel of the armature. When the same length of

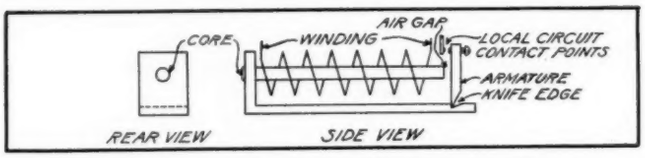


Fig. 108. Single Pole, Knife Edge Armature Relay.

extreme separation of the contact points is desired, the average length of the air gap may be made much shorter in this type than in the earlier relay.

With a shorter air gap, according to the law of magnetic attraction, the relay will not require as many ampere turns to operate it as it otherwise would. Since the telephone relay is almost always operated from a storage battery at a fixed voltage, it follows that any reduction in the number of ampere turns required, may be made the basis for economy in battery current consumption. As a matter of fact, both the resistance of the winding may be increased and the consumption of battery current reduced when a reduction in the operating ampere turns is permissible. In this way finer wire is used, the number of turns is increased and the loss due to the use of less current is made up by the increased number of turns.

263. *The multi-contact relay.*—The type of relay shown in Fig. 108 is very satisfactory. It is reasonably economical, but is evidently not adapted to the operation of more than one set of local contacts at a time. If, for instance, the relay is required to close two circuits and open two others, this type would not serve. For this reason, the type shown in Fig. 109-*A* was produced and placed in service. It is to be noted that the arrangement of the iron parts of the magnetic circuit is not exactly the same in the types shown.

In the type of structure shown in Fig. 109-*A*, the armature is nearly as long as the core of the coil and lies parallel with it. In Fig. 108 the armature is short and stands at right angles to the core. Instead of being mounted upon the end of the return portion of the relay frame and rocking to and fro upon a knife edge contact as in Fig. 108, the armature is loosely supported in position by a flexible strip. When the coil is energized, the armature is at once drawn to the inside of the two L-shaped, polar extensions at the ends of the core. As it moves in this direction, it moves with itself the various contact springs.

264. *Good features of the multi-contact relay.*—This type of relay may be used to operate one or more sets of contact springs placed side by side. The dimensions are such that this kind of relay may be used to operate as many as three sets of contact springs simultaneously. Owing to the form of the magnetic circuit, the relay is both sensitive and positive in action. It is to be noted, however, that even at the beginning of its travel, the armature is moving against the tension of the contact springs. When the coil is de-energized, therefore, this type of relay is very quick to return to its normal condition.

At the point between the pole and the armature, the air gap is of increased area. This is accomplished by the extension of the armature below and beyond the overhanging end of the frame. By increasing the sectional area of the air gap and thereby giving the magnetic circuit a lower reluctance, a very sensitive relay is produced. In addition to increased sensibility, this type of relay renders possible the control of one or more local circuits by the one armature.

In this type, as well as in the type shown in Fig. 108, there is some small possibility of a stray magnetic field being found in the surrounding space. The use of a return path for the magnetic flux in this way instead of the cylindrical shell used in the tubular drop is sanctioned by the best manufacturing and engineering practice. In order to prevent any disturbance due to the possible stray magnetic field, it is necessary to provide each relay of these types with an iron shell. This shell is tubular and entirely encloses the relay, acting as a magnetic path for the stray lines and preventing any trouble due to magnetic leakage.

265. *Essentials of relay operation.*—In the analysis of the different designs for relay construction, it is necessary to keep in mind the essentials aimed at in the operation of the equipment. As a general thing any relay is improved when its air gap is shortened and when the travel of the contact springs in operation is made longer. The short air gap renders the relay sensitive and economical, while the longer travel of the contact points renders the switching operation of the relay more dependable and its reliability in the circuit more assured. In the design of the different types of relay structure, the various manufacturers have all striven for these points with marked success.

266. *The poles of relays.*—In descriptive matter relating to the structural types of relays, it is customary to refer to the number of *sets* of springs operated by the armature as the number of poles. Thus the relay in Fig. 108 would be known as a one-pole relay, while it would be perfectly possible to arrange the type of relay shown in Fig. 109-*A* so that the movement of its armature would close three contacts. This would necessitate the use of three sets of springs as shown in Fig. 109-*B*. Any relay with such an arrangement of springs would be known as a three-pole relay.

In automatic switching it is customary to use relays having a great many more poles than are usual in manual practice. Relays have been designed and placed in successful operation

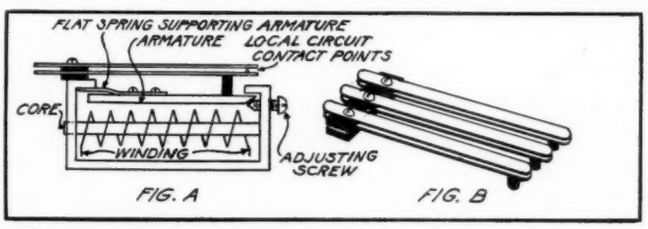


Fig. 109. Spring Supported Armature Relay.

having 32 sets of normally open contacts which are all closed simultaneously by the movement of the one armature with which the relay is provided.

(To be Continued.)

Improvements at Owensboro, Ky.

The Owensboro Home Telephone Co. has begun improvements to its system at Owensboro, Ky., which will include the placing of open wires in cables along the principal streets.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision Over Telephone Companies, Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchises, Rates and Service

Further Inquiry of Chicago Automatic System.

In a letter received last week by the Chicago council committee on gas, oil and electric light, B. E. Sunny, president of the Chicago Telephone Co., estimates the value of the automatic telephone plant of the Illinois Telephone & Telegraph Co. to the Bell company to be $4,122,000. Kempster B. Miller's report, which is before the committee, estimates the value of the property to the Chicago Telephone Co. at $1,141,594. This is about one-fifth of the proposed purchase price.

The value of the tunnel as a wire-carrying utility, Mr. Sunny points out in his letter as the chief reason why purchase of the automatic system is desirable for the Bell concern.

"The tunnel is almost ideal," he says, "because of the ease with which cables can be installed, their safety after installation, the low cost of maintenance, and especially the use of the tunnel for the purpose avoids the necessity of opening paved streets, to the interruption of general traffic while repairs and changes are under way.

The biggest problem in caring for a growing telephone system is the underground distribution of wires. We must add underground conduits and cables at the same rate that we do telephone buildings, switchboards, etc. The question is, therefore: Shall we open the paved and busy streets to construct conduits or shall we utilize the present almost idle tunnel to the extent that it can be used for the purpose?"

A special meeting was held early this week to consider Mr. Sunny's letter. It was decided to have Kempster B. Miller present a supplemental report on the actual value of the plant to the Chicago Telephone Co., to which the automatic plant would be transferred by the American Telephone & Telegraph Co. in the event the proposed sale is sanctioned.

Almost the entire afternoon was spent in a maze of engineering details. President Sunny, of the Chicago Telephone Co., read the letter he sent the committee last week, taking exception to some of the valuations reported by Mr. Miller. The latter replied that any possible errors were due to his having been given incorrect or inadequate information by Mr. Sunny's company.

After several hours of discussion it was suggested that the company be asked to furnish Mr. Miller with the information on which Mr. Sunny's points were based, and Mr. Miller was asked to determine whether the added information altered his conclusions.

How One Company is Handling the Rate Increase Problem.

A unique move in the history of relationships between public utility and consumer has been made by J. C. Marsh, president of the Marshfield (Wis.) Telephone Co., who before taking up with the Wisconsin Railroad Commission the question of increased rates has sent a circular letter to all his subscribers taking them into his confidence in the matter.

Mr. Marsh's letter was sent out to every subscriber of the Marshfield exchange. It was accompanied by a copy of a letter which is later to be sent to the state railroad commission. Mr. Marsh said:

"Enclosed you will find a letter we will soon send to the Wisconsin Railroad Commission. By this letter you will note that we expect to petition the commission for an increase and for a readjustment of rates. The letter also explains why we do not ask for a specific advance or re-adjustment, but we believe that when the commission finally decides the question it will place our rates more on the European plan, that is, those subscribers desiring individual lines, special equipment, etc., will pay more and those with extension telephones, party lines, and rural telephones will be unchanged or pay less.

The relationship between a public utility and its patrons, under our laws, is mutual. The laws demand that the best service possible for the existing rates be given by the utility company, and practically protects the company from loss by fixing a just rate for the service rendered so that a reasonable return on the investment may be made.

It is true that this exchange has not been paying this reasonable return for years. It is a well known fact among telephone companies that the larger the exchange the larger the operating expense per telephone. When our present rate was adopted each subscriber could call 287 telephones. Today for the same rental we connect 1,251 different telephones. It is also true that the rate in the surrounding towns, such as Grand Rapids, Stevens Point, Wausau and Neillsville is higher than ours.

We send you this letter that you may know first just what we are going to do and to invite you to call at the office, talk it over and be shown any or all parts of our books."

The letter to the railroad commission alluded to in the foregoing communication read as follows:

"We are herewith enclosing to you a petition for an increase and readjustment of our rates. You will note that we are not asking for a specific advance owing to the fact that we believe it imprudent to do so without knowing what valuation your commission will place on the plant and have determined the correctness of the operating expenses. We further wish to state that should you deem it necessary to make a physical valuation we would suggest that you do so as soon as you can on account of weather conditions and because the roads will soon be bad. Please advise me in this matter."

Proposed Telephone Consolidations in New York State.

The American Telephone & Telegraph Co. has advised the Department of Justice, Washington, D. C., of the proposed acquisition by its subsidiary, the New York Telephone Co., of the exchange of the Federal Telephone & Telegraph Co., located at Cortland, N. Y., and the proposed acquisition by the Federal Telephone & Telegraph Co., of the exchange of the New York Telephone Co. located at Penn Yan, N. Y.

It is represented to the Department of Justice that at Cortland the New York company's exchange has about 2,525 stations and the Federal company's exchange only about 184 stations; that at Penn Yan the Federal company's exchange has about 1,335 stations and the New York company's exchange only about 251 stations. By reason of this disparity in the number of subscribers served the A. T. & T. Co. states that there exists no real competition between the two exchanges at either point.

It is further represented that virtually no interstate messages are transmitted through these exchanges.

May Discontinue Service for Non-Payment of Rental.

In the proceedings brought against the Belmond (Iowa) Telephone Co. in the district court, at Fort Dodge, by W. H. Purdy for a writ of mandamus ordering the defendant to install a telephone in his house, Judge Wright decided

in favor of the telephone company. The controversy started when, on August 5, the telephone company removed the plaintiff's telephone, on account of not being able to collect a bill of $6.51 for rent and toll service. On or about August 20 Mr. Purdy called at the telephone company's office and ordered a telephone installed in his house, tendering $2.50 to pay for two months' rent in advance. The manager told him that he would first have to settle the bill due the company for past services. This he refused to do.

A few days later Mr. Purdy sued the telephone company in the justice court for $99.95 damages which he claimed he had sustained, due to his being without telephone service. When the day for trial came, however, he dismissed the case at his own costs.

A short time thereafter he brought suit in the district court at Fort Dodge, asking for a writ of mandamus ordering the telephone company to install a telephone in his house. At the trial, on November 30, Mr. Purdy contended that he did not owe the bill because he received poor service. The court decided in favor of the telephone company and refused the writ of mandamus to the plaintiff.

Over Line Charge to Canadian Bell Abolished.

The Ontario Railway and Municipal Board recently ruled on the objections filed by Williams Brothers to the over line charge of five cents paid on long-distance calls over the Bell system (by subscribers of the Woodbridge & Vaughn Telephone Co., Ltd., of Woodbridge, Ontario) in addition to the usual long-distance toll. The board ordered that this over line charge be abolished, as subscribers paying rental for local service were entitled to transmit or receive long-distance messages on payment of the regular long-distance charge. According to the evidence, the Bell company pays the Woodbridge & Vaughn Telephone Co., Ltd., a commission of 20 per cent. on all long-distance business originating upon the latter system.

Bell Dismisses Action Against City of Butte, Mont.

The suit brought in the federal court by the Mountain States Telephone & Telegraph Co. of Butte, Mont., in an effort to enjoin the city and to prevent it from forcing the telephone company to place its wires underground in Butte, was dismissed in a decree made recently by Judge George M. Bourquin. This action followed a stipulation signed by attorneys for both parties in which they asked that the suit be dismissed without prejudice.

The suit was filed about a year ago and the city sought to have the suit quashed, which was denied in a decision of the court. The city then answered the suit and it has been pending since. The restraining order was declared vacated.

Plea for Connection at Owatonna, Minn., Dismissed.

Because the city of Owatonna, Minn., failed to notify the telephone companies that physical connection was desired between the toll stations of the Tri-State Telephone & Telegraph Co. and the Northwestern Telephone Exchange Co. at Owatonna, before asking the railroad and warehouse commission for a hearing, the commission has dismissed the petition.

The law requires that questions of this kind be submitted first to the companies. The city must first notify the companies of the desired physical connection, and if they refuse to grant it the city can then file a petition with the commission.

Itemized Statement of Subscriber's Account.

An interesting telephone case has just been settled in Waukesha county, Wis. Henry Wrede, of North Prairie, refused to pay a bill amounting to $7.80 for long distance and local telephone tolls, because, he claimed, he did not receive an itemized statement. The Eagle Telephone Co. brought suit in justice court, where the case was tried before a jury and a verdict was given to the defendant.

The company appealed the case and Judge Agnew of the county court reversed the jury holding claiming that there was no legal obligation on the part of the company to serve an itemized statement of its account upon Wrede before bringing suit. It held that it was as much the duty of Mr. Wrede to keep an account as it was for the company to do so.

Physical Connection Ordered in Wisconsin.

The Wisconsin Railroad Commission, on December 14, ordered a physical connection between the Merton Telephone Co., of Merton, and the Pewaukee Telephone Co., of Pewaukee. Prior to February this year, these two companies had physical connection, but the lines were blown down by a storm and not repaired. The commission now orders a connection.

Charges for Installing Telephones at Sargent, Neb.

The Nebraska State Railway Commission has authorized the Crownover Telephone Co., of Sargent, Neb., to make a charge of $1 for installing telephones in town and $2 for installation out of town. After a telephone has been installed one year this charge is to be remitted. For changing a telephone instrument from one location to another the company is authorized to charge from $1 to $3, according to the distance. The company owns some telephone instruments on farm lines of the Comstock exchange, and for these it is authorized to increase the rate from $1 a month to $1.25 a month, net.

Telephone Company Freed of Negligence Charge.

In a ruling recently handed down in the case of the Providence-Washington Insurance Co. vs. the Iowa Telephone Co., appellant, the Iowa supreme court held that the evidence presented was not sufficient to show that the telephone company was negligent in sending in a fire alarm. An automobile owned by a doctor of Davenport was destroyed in a fire. The insurance company paid the loss and sued the telephone company, claiming that there would have been only a small loss had the telephone operator sent in the alarm promptly.

No Extra Charge for Use of Telephone by Guests.

On the application of Williams brothers for a ruling on the right of the Woodbridge & Vaughan Telephone Co., Ltd., of Woodbridge, Ont., to charge relatives, employes and guests using its subscribers' telephone a toll of 10 cents per call, the Ontario Railway & Municipal Board ruled that the rental paid by the subscriber for the service covered such conversations.

Telephone Suit Against City of Los Angeles Dismissed.

A formal dismissal of the injunction suit of the Pacific Telephone & Telegraph Co. against the city of Los Angeles, Cal., involving rates fixed by the board of public utilities for the fiscal year 1915-16, was signed recently by Federal Judge Robert S. Bean. The decree also vacates the order for an injunction pendente lite, authorized by United States District Judge Van Fleet.

Right to Extend Telephone System.

The court on writ of review under the California public utilities act (St. 1911 [extra session], page 55), section 67, to review an order of the railroad commission denying to a telephone company a certificate to extend its system into a

certain city, cannot determine whether section 50 of the act, requiring such certificate, is valid, where the city has authority under the law to permit such extension. Valley Telephone Co. vs. California Railroad Commission, Supreme Court of California, 151 Pacific, 740.

Burden of Proof of Reasonableness of Charges.

As chapter 240, of the 1914 laws of New York, relates only to common carriers, the rule that in all proceedings instituted before the public service commission against public service corporations to review a change of rates the complainants have the burden of proving that the rates are unreasonable, applies to a proceeding to regulate telephone rates, and where complainants made no showing that the rates were unreasonable an order reducing them will be reversed. New York Telephone Co. vs. New York Public Service Commission, Supreme Court of New York, 154 New York Supplement, 1,098.

Compensation for Taking of Telephone Property.

Where a telephone company accepted a franchise to construct and maintain a telephone system on a public highway, and in reliance thereon acquired easements and erected and entered on the operation of its system, a contract between the state and the company was thereby created, and the franchise, easements, and physical structures became property of the company, of which it could not be deprived by the state without compensation. New York Telephone Co. vs. State, Supreme Court of New York, 154 New York Supplement, 1,059.

Summary of State Commission Hearings and Rulings.

CALIFORNIA.

December: Complaint filed by Mayor Sebastian, of Los Angeles, relative to the returning of coins deposited in pay stations when service is not rendered. In his complaint the mayor states that he has received numerous complaints and that in many instances after a failure to get a connection the coin is retained.

CANADA.

December: The Ontario Railway & Municipal Board approved the establishment of a local municipal telephone system by the village of Coldwater, under the Ontario telephone act.

December 7: The Ontario Railway & Municipal Board ruled that the Woodbridge & Vaughan Telephone Co. cannot charge an extra toll of 10 cents per call to relatives, employes and guests using its subscribers' telephones, the rental paid by the subscriber covering such service. This ruling is the result of an application filed by Williams brothers.

December 7: In the complaint of William brothers the Ontario Railway & Municipal Board ordered the Bell company to abolish its over line charge of five cents to subscribers of the Woodbridge & Vaughan Telephone Co. The board held that subscribers paying rental for local service were entitled to transmit or receive long-distance messages on payment of the regular long distance charge.

COLORADO.

December 31: Hearing on petition of 50 citizens of Flagler, Colo., for an order requiring the Mountain States Telephone & Telegraph Co. to extend its lines to connect six towns east of Denver, namely, Bovina, Seibert, Stratton, Vena, Flagler and Burlington.

INDIANA.

December 3: Application filed for approval of the sale of the Central Union Telephone Co.'s plant at Gaston, Ind., to the Gaston Home Telephone Co. for a consideration of $1,000.

December 20: Postponed hearing of complaints of subscribers of the Citizens Telephone Co., of Columbus, Ind.

KANSAS.

December 8: Application filed by the Plains Telephone Co., of Plains, Kan., for permission to issue a $3,500 five-year note to take care of a mortgage that falls due in the near future.

MAINE.

December 2: Hearing on petition of the Franklin Farmers Co-operative Telephone Co. to operate in New Vineyard.

MICHIGAN.

December 3: Application filed by the United Home Telephone Co., of Muskegon, for authority to exchange properties with the Michigan State Telephone Co. in several counties in the western part of the state. Transfers will be made in Ottawa, Muskegon, Newaygo, Lake, Manistee and Mason counties, if the commission approves the plan.

MINNESOTA.

December: The commission dismissed the petition of the city of Owatonna for physical connection between the toll stations of the Tri-State Telephone & Telegraph Co. and the Northwestern Telephone Exchange Co. at Owatonna, as the city had failed to notify the telephone companies that such connection was desired.

MISSOURI.

January 22: Continued hearing in the matter of the application of the Kansas City Southern Railway Co., asking that the commission adopt uniform rules and regulations governing the construction of telephone, telegraph and other electrical signaling wires over the tracks and rights of way of railroad companies in the state. A committee has been appointed, composed of members of the different wire using companies, with Commissioner Howard B. Shaw, as chairman, to secure data and draft a set of proposed specifications for the instructions.

MONTANA.

December 8: Hearing at Kalispell, Mont., on the matter of the telephone service and rates of the Northern Idaho & Montana Power Co. Lower rates and better service are sought.

NEBRASKA.

December: Hearing on application of the Lincoln Telephone & Telegraph Co. for permission to increase its rate for switching farm lines out of its exchanges at Milford and Seward.

December: The commission approved the issue of $2,435 of capital stock by the Milburn & Anselmo Telephone Co., of Merna, Neb. The company had already issued the stock without asking permission of the commission but when the company showed that the money received was invested in betterments the commission approved the issue.

December: The commission authorized the Crownover Telephone Co., of Sargent, to make a charge of $1 for installing telephones in town and $2 for installation out of town. After the telephone has been installed for a year this charge is to be returned. For changing the location of a telephone the company is authorized to charge from $1 to $3 according to the distance. The company is also authorized to increase its rate on some telephone instruments on farm lines of the Comstock exchange from $1 a month to $1.25 a month, net.

OHIO.

December 11: Newark Telephone Co., of Newark, Ohio, authorized to issue its 6 per cent. preferred capital stock of the total par value of $50,000, the proceeds to be used for the purpose of making extensions and betterments to its system. Case No. 654.

OREGON.

December 6: The commission denied the petition of the Pacific Telephone & Telegraph Co. for a modification of the recent order fixing disconnecting charges at $2.50. The company asked that it be allowed to make a charge of $3.50, thus including a charge of $1 for reconnections.

PENNSYLVANIA.

December 20: Continued hearing of complaints of the city of Pittsburgh, Pa., and the Chamber of Commerce against the rates of the Central District Telephone Co. in Pittsburgh.

WISCONSIN.

December 3: Hearing at Boyd, Wis., in the case of Aug. Cirkel vs. the Cadott Telephone Co., in regard to service. U—832.

December 3: Hearing at Boyd, Wis., in re proposed extension of the Red Oak Telephone Co. into the town of Delmar, Chippewa county, Wis. T—396.

December 6: Hearing in re the proposed extension of the Interurban Telephone Co., in the town of Medina, Dane county. T—410.

December 7: Hearing in re application of the German Telephone Co., for a certificate of convenience and necessity. T—331.

December 15: Hearing in the case of E. F. DeBower vs. the Lodi Telephone Exchange, the Waunakee Telephone Co., and the Dane Farmers Line, in regard to connection. U—854.

December 16: Hearing at Winter, Wis., in re investigation on motion of the commission, in respect to inadequacy of the service of the Rice Lake & Northeastern Telephone Co. U—852.

December 15: Physical connection ordered between the Merton Telephone Co., of Merton, and the Pewaukee Telephone Co., of Pewaukee. Prior to February this year these two companies had physical connection, but the lines were blown down by a storm and not repaired. The commission now orders a connection.

December 16: Hearing in the case of the Farmers Inter-County Mutual Telephone Co. vs. the Mauston Electric Service Co., in regard to connection. U—857.

The Battle Cry of Peace

Our Great Convention—Our Preparedness

By J. C. Kelsey

War was suddenly declared. Before we fully realized it, a hostile navy was at our gates. Our own navy hurried to the conflict and sank beneath the waves, a victim of a lack of preparedness.

Our coast defenses vainly took up the battle but the long range guns of an enemy beyond their range dropped shells upon the defenders. The enemy's aeroplanes showered bombs upon our fleeing citizens and the troops of a foreign land tramped through our streets.

The most powerful man in America, betrayed by his spy friends, was lined up and shot as wantonly as if he were a sheep led to slaughter. This man, who defied the courts and who spent vast sums of money in opposing armaments, had no right of appeal—much less a trial.

His high-priced lawyers were fleeing from the city in high-powered cars and every court of law, built up for the protection of life and property, had fallen under the iron heel of failure on the part of our citizens who believed that the lion and the lamb had different natures than formerly.

Of course this is only a moving picture. The "Battle Cry of Peace" is but a story with a powerful moral attached. No man could sit through the picture of misery without being willing to donate a dreadnaught by himself.

Every telephone man should see it, for he will better realize that it is the business of a government to protect its citizens from foreign invaders and not to reform them from imaginary crimes.

The business of a government is to build ships and rifles, educate sailors and soldiers in the art of shooting well and give them something to shoot with.

All through the terrible picture, so full of horror, outrage and helplessness, I could not help but think of the last few years of our telephone life. I could not help but feel thankful that telephone men had seen the necessity of preparedness and were no longer divided as to our duty.

In our telephone life we had become divided and in the difference of opinion, real action and actual progress were forgotten. What a chance for an enemy of Independent telephony to bring about our ruin while we were divided upon the question of armament and protection!

We surely are fortunate that our telephone shores were not invaded by a ruthless enemy during the helpless period of the past four years.

We have a good example before us. A bill will be introduced in the Senate which demands that the telephone company and not the public, shall pay the penny upon every long distance message. This one attack alone is well worth all the expense of getting together last week in convention.

We can well congratulate ourselves that we are mobilized in good season to meet this grossly unfair invasion of our rights. In fact, the Bell interests can congratulate themselves that the real political force in the telephone business has patched up its difficulties and is prepared to fight, arm in arm, against every assault upon the telephone business.

As a political force, the Bell company is more or less helpless, particularly since money no longer exerts political power. Its efforts toward bettering public relations have been more or less wasted on millionaires, merchants, manufacturers, readers of popular magazines and people of means who are not in the habit of influencing elections.

As I looked over that magnificent body of Independent telephone men assembled last week, I realized where the real political power of the telephone business lies. It lies in the man who operates the local telephone exchange, the man of medium means, a natural politician and one acquainted with the real voters on questions of government ownership, preparedness and all.

Who are these voters? Who are all the men who give force to the agitation against corporations, against the telephone business specifically? Who is it that demands of the telephone company that it shall pay the tax?

Who demands the reduction in rates and watches the city attorney as he conducts the case? Who keeps up on political issues, discusses them, attends all primaries and never fails to vote? Who attends council meetings and has an idea that great corporations are unjustly fattening on the public?

Is it your banker, your merchant or your commercial club? No, they are solid for you.

It is your lineman, the blacksmith, the street sweeper, the city marshal, the man who has worked 30 years in the lumber yard and the man who has done odd jobs all his life.

It is said that 6 per cent. of the voters control our primaries and that every politician knows it. So far 60 per cent. of this 6 per cent. have been the humble workmen who do not read magazines and who cannot afford to belong to the commercial club. These men still believe that great corporations are wringing the necks of the people.

Who can reach these men? Can the hired man of a railroad, a telegraph or a great telephone company reach these people? If they could, they would not.

Can you not see that the Independent telephone man, the unit, the man who owns his property and cares about it, is the man who alone can compel the politicians to do the proper thing by reaching the 60 per cent. of the 6 per cent. and teaching them the way? No greater force exists than that which can be exerted by our united Independent telephone men. No other system of public relations is superior.

Aside from the power of unity and preparedness, there is a sentimental side. Every telephone man at the convention was glad that the time had come when all men should agree again.

We have had unhappy times and old friends grew apart over fancied wrongs or differences of opinion. Telephone men gave and took in a manly way and no man has a soul so dead as to not appreciate the various and many sacrifices.

Every man who gave up some part of his belief or principle in an effort to unify our association life, deserves the concerted thanks of our industry. We never had a real difference about the telephone business—it was only over the form of its administration. We stand today with all personalities forgiven—life is too short to hate a fellow telephone man.

Ten years ago we had a definite issue against the Bell interests. At that time, almost every Bell official dreamed of the hour when the Independent telephone bubble should

burst and monopoly would again hold its sway. Today, we know many things which we did not know ten years ago. We still have issues, but these are not so fatal or even serious.

It is true that the Bell company is still holding out on physical connection and it still maintains its absurd manufacturing contract. The Bell company could well afford to cast every so-called or self-thought advantage over Independents to the winds in exchange for an enthusiastic and individual co-operation of all telephone men.

This company surely is confident enough of its power to throw down all the bars of its fancied security and become a real, yet helpful power. What would it avail the Bell company if it gained the whole world and lost its own soul in the whirlpool of government ownership?

We must realize that times change. It is hard for the human mind to sympathize with new ideas. I suppose that is a wise provision of nature as it makes old men more willing to die.

There has been a definite change in the manner of financing. At one time we all depended upon local sales of stock, but now many of us have grown beyond local needs and have something that is attractive to people at a distance.

It surely cannot be called wrong for an Independent telephone man to borrow money from a trust company which the Bell company patronizes. It cannot be called wrong for our manufacturers to pool patents and such wasteful interests. It cannot be called wrong for an Independent telephone company to have a minority Bell interest. The only telephone company we cannot fraternize with is the one with the perpetual licensee contract thrust upon it.

There are many-interests companies. That is what the Lincoln company is. The Bell company owns some preferred stock and possibly some bonds, but the common or control stock is where it has always been. Would you have preferred to lose this company entirely or have it put on its present powerful basis?

If the Lincoln company should fail to pay interest and take care of the rust, we would not want to keep it Independent. That is the only way it will be lost to us. So make up your mind that the Lincoln company is going to be Independent as long as it is successful. And those who know the management know it will be.

It was rumored about the convention that the Bell company had an option on the great Ohio State Telephone Co. so ably conducted by our Independent telephone friends. I went to the records of the Central Union law suit and found out exactly what Mr. Vail's testimony was.

When asked if he had any control or ownership of any degree in the Ohio company he stated that he had absolutely none. When asked if he had an option of any kind, he said his company had the same privilege of buying the stocks and bonds of the Ohio State as you and I have.

We truly have that privilege at all times and the Ohio State would be glad to sell us all a large block of stock. So let us dispel for all time any thought or suspicion of this company or any other.

If someone came to your town and offered a big price for the stock of your company, do you imagine he would be ignored? If you had stock in a company in which you were not vitally interested as a manager, and you received a very attractive offer, I am very sure that you would sell. That means that an option exists to buy every company in existence which makes a public offering of its stock.

Out of this convention grows this fact: The real test of the Independent telephone business is your ability to pay interest and take care of rust. If you can do that, you pass the Dardanelles of failure, safely. Not all Bell companies do this. We have considerable company, be sure of that.

To pay interest and take care of rust at our present income requires efficiency. We are more interested in perfecting operating rules, teaching standardization and practicing proper economy, than in suspecting our neighbor.

We are more interested in watching legislation at Washington than we are in legislating against a suspected telephone man. Suspicion is one of our ugliest traits and we should give it permanent banishment.

As I write, I am on the back seat in a jury box. Two people cannot agree and are foolish enough to leave the decision to twelve men who do not care, and would hang both parties to the suit before they would let it interfere with the quitting hour.

It surely shows the common sense of mending one's own difficulties by compromise when it can be done. It reveals the great common sense of telephone men in meeting one another in harmony and peace last week. Had we kept on and left our respective cases to a public jury, we would have received nothing but scorn and disgust for the folly of not getting together.

My mind is not on this jury trial—it is on the great convention, especially upon the army of telephone men who love the business and are making its name heard in the halls of financial achievement.

I wish I had space to tell of each man who loves the business, from Adams to Zahn, these two great and good men who guard the ends of the list. We have so many successful men and so many achievements that we would all be surprised to hear of them.

We, ourselves, would be in the position of a lawyer in a great telephone case now going on, who was surprised to learn that 300,000 Bell telephones operated in a territory having 900,000 Independents. We have no reason to be ashamed of the facts.

Every telephone man left the great convention with a big load off his heart. He went home, not only convinced of our new preparedness to meet our conditions, but to begin to add to his subscribers' list.

It is hard to advocate growth in any enterprise when the air is filled with talk of weakness and shrinkage. The person who wrote that harmony is the strength and support of every association but most especially ours, knew what he was talking about. Today, as a result of harmony, we stand as one of the foremost political as well as economic factors in America.

If a man has a soul so dead that he cannot see the beauty and position of the telephone business, let him get out of it. No law or opinion should waste any time upon keeping him in. As long as he lives with us, he will worry us with his indifference and his tendency, as well, to desert us in a possible crisis. Let him get out before we have a crisis.

We will never be operating at 100 per cent. efficiency until every man in the telephone business loves his business and fully realizes that it is the best business in the world.

Don't fail to see the "Battle Cry of Peace." You will not only realize the value of preparedness but will realize that true preparedness comes from unity and harmony.

The chances are that the European war would never have started had each nation not been torn by various dissensions. No enemy will ever attack Independent telephony if we hang together.

MORAL: It's a chestnut possibly, but "In unity is strength."

Practical Subjects—Letters and Discussions

Units as a Measure of Quantity, Value and Efficiency.

Any one who has thoughtfully considered the operation of a large enterprise such as a telephone company, says S. T. Rodgers in The Pacific Telephone Magazine, has undoubtedly realized that the successful and efficient operation of the company as a whole depends upon the efficient performance of each function required for its operation. The construction, maintenance and operation of a telephone plant require the services of thousands of employes performing many different operations, and as a measure of the efficiency with which each operation is performed, a standard or unit is necessary. The word "unit" is defined as a standard of quantity or amount and it is the purpose of this article to outline a few of the many uses which are made of units by the telephone company.

The term "plant measurements" is applied to those units of plant which are added or removed under estimates. The engineer in preparing the estimates shows not only the estimated cost, but the number of plant units which are to be added or removed. These units consist of items such as number of cross arms, poles, sub-stations, P. B. X. switchboards, miles of pole line, miles of aerial wire in cable, miles of aerial wire bare, miles of wire underground, etc., and serve a double purpose, the first as a means of checking the estimate itself. By comparing the unit costs of the proposed work with the known unit cost of similar work the approximate correctness of the estimate can readily be determined. The second and more important use is as a measure of the quantity and relative cost of additions to the plant. When the work is done the units of plant which are actually added are reported for each estimate. Upon the completion of the work a comparison is made of the estimated and actual units of plant added and the estimated and actual costs. This comparison is a test of the efficiency with which the work under the estimate was done.

The reported units of plant added under estimates are then totaled separately for each division and when applied to the total reported expenditures give the total quantity, by units, of plant added and the unit cost. These units and costs are compiled in the form of monthly reports and a comparison of the reports indicates the efficiency with which construction work is being handled in each division.

Similar reports are prepared monthly covering maintenance costs. In these reports the total reported repair charges by plant accounts are divided by the total number of plant units in each division to obtain the unit costs. The subscriber station is used as the unit for sub-station plant, the exchange line for exchange plant and central office equipment, etc. A comparison of these reports indicates the efficiency with which maintenance work is being handled and similar reports prepared by districts serve the same purpose in comparing the efficiency of districts.

Another use which is made of units is in estimating and inventory and appraisal work. In many kinds of estimating work, it is found that additions are always made in certain definite units; for example, in the case of central office equipment, circuits are always installed complete. In no case is only a portion of a circuit installed as the circuit would be inoperative without the remainder of the equipment. Advantage is taken of this fact and unit costs prepared for each circuit and part of the equipment which is added in definite units.

These unit costs are then used in preparing estimates for additional equipment, thus greatly reducing the amount of work required to prepare the estimate. In preparing an inventory of a telephone plant it is convenient and desirable to arrange the items of material into groups or units corresponding to the units of plant of which they form a part. With this arrangement any item of plant can readily be identified and its use or place in the plant determined. When preparing an appraisal of the plant from an inventory it is then necessary to only price and extend the items of material for each unit, thus obtaining the unit cost which, when multiplied by the total units, gives the total value of the plant.

A further use of units and unit costs is in analyzing and checking the provisional estimate which is prepared annually covering proposed expenditures for the following year. By comparing the proposed expenditures with the estimated gain in stations and the present plant valuation with the present stations, thus obtaining the unit cost of the proposed work and the present unit plant investment, the economy of the proposed work can readily be determined. By the use of units and unit costs uneconomical investments are avoided.

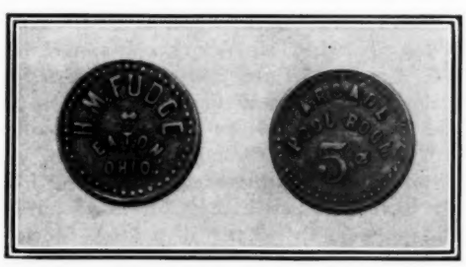
The primary use of units is as a measure or test of efficiency by comparing results. At present this test is applied only to the combined results of the efforts of many employes and does not indicate individual efficiency. The observation of supervising officials is at present the only means of measuring individual efficiency, but it is possible for each employe to establish a standard or unit of efficiency for himself. A conscientious comparison of each day's work with this standard will give each of us a very good idea of how efficiently we are performing our part in the operation of the company. By constantly raising this standard we can each increase our individual efficiency, which will have the direct result of increasing the efficiency of the company as a whole.

Operating Rules Become a Detective.

It is surprising what results careful and systematic methods will accomplish. The Ohio State Telephone Co. has published and distributed a book of operating rules to its own and connecting exchanges which has done wonders in relieving traffic congestion and raising the efficiency of Ohio's telephone service. We doubt though if it was the intention of the publishers to rival Sherlock Holmes or Craig Kennedy. But it would seem that the rules have accomplished even that.

Last month we were somewhat surprised, and the least bit "miffed," to take three poolroom checks just the size of a quarter out of one of our CR pay stations. Pay stations are on our files just as any other subscriber. By checking the total amounts on this pay station record, we found that any one of eleven tickets might have put in the one of the slugs. Overtime eliminated two more tickets.

Our operators saved the day for they have organized a school and studied their rule books. Section 292 provides that the operator shall make a note on the back of all CR pay station tickets, the amount of the collection as it is rung in. This saved the day and brought the possibilities down to three, two of which could have put in only one "slug" apiece. The



Poolroom Checks Found in Telephone Pay Station Coin Box.

other ticket had on its back, "25-25-25-25-10-10-5-1." There was also complaint by the sender on the charge. The sender of this message was also a subscriber entitled to credit.

Needless to say a statement for telephone service rendered at the pay station brought about a prompt redemption of the checks.

Paulding, Ohio. Ward H. Snook.

Something About Kansas Methods.

The accompanying illustration shows G. W. Shiflett and F. G. Kier ready to start to work repairing lines damaged by storm. Mr. Shiflett is owner and manager of the Independent Telephone Co., of Caldwell, Kan. Caldwell is a busy little city of about 3,000 inhabitants, situated in

Getting Poles to the Place Needed, in a Hurry.

southern Kansas and was quite prominent at one time as a frontier town.

Mr. Shiflett became owner and manager of this exchange some five years ago, and by his untiring energy and the help of his hustling linemen has brought from a tangled mass of wire and decayed poles, an exhange that he thinks is second to none. It is alive to the needs of its patrons, which is the life of a telephone company. Needless to say this was a losing proposition when Mr. Shiflett gained control, but he has put it on a paying basis, connecting about 1,500 telephones. Mr. Shiflett says his motto is, and always has been in telephone work: "Do It Now."

Some Improved Methods for Handling Information Calls.

At those central offices which do not have a sufficient number of information calls to keep one operator busy in the busiest hour of the day the problem is how to handle such calls promptly and accurately but economically, according to T. F. Swords and C. F. Lincoln in a recent issue of The Telephone News. Until recently it was the general practice, for offices having in the busy hour anything less than one operator's load, to cover an isolated information desk practically the whole day. This meant than in the busy hour of the day the operator would work at almost a maximum efficiency, but that in the other hours the efficiency would decrease in the same ratio as the less busy hour was to the busy hour. As a matter of fact, in the less busy hours it would have been very easy to play solitaire or do a little sewing and still handle the few stray calls that came to her.

Within the last year and a half, attention has been directed toward equating information, trouble and multiple marking calls in the same manner as local and toll work. For the information of those who are not familiar with the work of equating the various classes of toll and local calls to the same unit, it might be added that the traffic department has made and is making considerable progress toward gaining a scientific estimate of the number of people required at a switchboard for every hour of the day, and this estimate is primarily based upon the art of equating the various classes of calls.

The difficulties of equating information, trouble and multiple marking calls lie in the fact that the individual units of time required to handle not only each of the three classes but calls in the same class, vary considerably. The amount of information work having been figured out and added to the local and toll requirements, gives not only the total requirements for all the traffic, but shows where the information work can best be combined with the other two classes.

The information work at Atlantic City, N. J., has been entirely transferred to the multiple marking position for the winter months and throughout the year at Norristown, Pa. This method does not indicate a decrease in this class of traffic from similar months of previous years, but a desire to encourage team-work and take advantage of the employe's hours. It is a proposition that requires careful study in offices that show great variations in traffic loads during different periods of the year to so arrange the schedules that the information and supervisory hours are not out of proportion to the "A" and "B" hours. The combining of the information and multiple marking position was tried out during the light hours for two weeks, and when the operators became accustomed to the combination of traffic the use of the information desk was discontinued. A part of the "changed number" group of trunks is utilized for information trunks, and in this manner the subscriber is not confused or annoyed by the use of a wrong expression. The result from a service viewpoint has proven satisfactory, and a single position has carried the load.

It might be thought at first that the information card files, street index records, directories, could be arranged better on the information desk, but it has been found that these records placed upon a table on the same level as the keyboard and adjacent to the information operator work out very well. In the smaller offices a shelf is attached to the keyboard, and this serves the place of a table.

The recent installation of a special "B" position in Camden, N. J., for night hours has resulted in a very efficient and economical arrangement of caring for the "B" traffic. Under the former arrangement at Camden, where there are four operated "B" positions, it was necessary for one operator to devote her time exclusively to this class of traffic between 10 p. m. and 7 a. m. The special "B" position is located adjacent to the end toll position, equipped with a connecting key, which enables the toll operator to combine the work with that of her own position. One or two trunks of each group, the number depending on the size of the group, are connected to the special position, and, when the traffic permits, the original "B" positions are abandoned and the special night position cut into service. The new arrangement has the advantage of simplifying the work for the night operators, as there are fewer trunks to handle, and provides a better load distribution.

Keeping the Telephone Directory Up To Date.

Some months ago the Cumberland Telephone & Telegraph Co.'s information operators at Louisville, Ky., were instructed to ask patrons calling for numbers of stations which had been discontinued, to "Strike the name and number from the directory, please." Since then the company has also put into effect another plan, that of suggesting to persons asking for new numbers—stations installed since publication of the last directory—to "Please write it in your directory." If the advice is followed, it can readily be seen that the efficiency of the system would be increased markedly.

Bonuses to Operators at Troy, N. Y.

The New York Telephone Co. recently made a distribution of cash bonuses to five of its operators at the Troy, N. Y., exchange, based upon length of service and efficiency. Those who received prizes are: Miss Irene T. Lyons, $100; Miss Katherine F. Hartigan, $50; Miss Mary O. Ledwith, $50; Miss Elizabeth Metcalf, $50; and Miss Gertrude H. Lester, $25.

Rebuilding Telephone Exchange at Bernice, Okla.

The United Telephone Co., which operates exchanges at Afton, Grove, Ketchum, Bernice and Cleora, Okla., is rebuilding its exchange at Bernice, which was almost completely destroyed by fire.

Annual Meeting of Ohio Automatic Telephone Association

Automatic Exchanges of United States, Canada and Cuba Represented at Two-Day Conference at Factory of Automatic Electric Co., Chicago—Regular Annual Meeting of Ohio Automatic Association in Chicago—Topics of Interest to all Departments Discussed

More than 100 men, representing 27 telephone companies in the United States, Canada and Cuba, gathered in the factory of the Automatic Electric Co. at Chicago for a two-day conference on Friday and Saturday, December 10 and 11. These companies operate some 41 automatic exchanges, and have in service, or are now installing, close to a quarter of a million telephones equipped with the dial.

The meeting was the regular annual session of the Ohio Automatic Telephone Association in Chicago, and in addition to its membership, invitations had been extended to all companies operating automatic equipment to have members of their staffs present and co-operate in the program. The delegates included presidents, general managers, engineers, commercial superintendents, superintendents of outside construction, superintendents of equipment, and maintenance men. The program was correspondingly broad in its scope, topics of interest to all of the various departments being included.

The first session was opened by H. A. Harris, vice-president and sales manager of the Automatic Electric Co., who welcomed the delegates in behalf of the company. In reply S. G. McMeen, president of the Ohio State Telephone Co., made a few remarks.

The first topic, "Automatic Long Distance Calling and Switching of Toll Lines," was broadly outlined by Mr. McMeen, who sketched briefly the skepticism that once existed in the minds of many engineers, as to the practicability of automatic operation. He stated it as his conviction that, judging by results already achieved, no limit could be placed to the economical and practical application of automatic equipment to such purposes.

Mr. McMeen's talk was discussed by G. K. Gann, of Lincoln, Neb.; R. L. Barry, of St. Paul, Minn.; John Wicks, of Columbus, Ohio; C. A. Torrey, of South Bend, Ind.; F. B. Moody, of Columbus, Ohio, and C. E. Ewing, of Buffalo, N. Y., who outlined briefly the work being carried on by their companies in this direction. President Joseph Harris, of the Automatic Electric Co., then delivered a brief address expressing his appreciation of the cordial co-operation which the operating companies had displayed in their relations with the manufacturers of automatic equipment. He stated his company thoroughly realized the fact that only through the practical experience of the men operating the apparatus had it been possible to develop it to its present perfected form.

Getting New Business.

The next subject, "Getting New Business," was the theme of a paper by R. R. Stevens, commercial superintendent of the Ohio State Telephone Co. He gave a most interesting outline of the results achieved by his company in obtaining more than 2,000 subscribers for the new automatic exchange in Zanesville, in the course of some five months. R. E. Mattison, of Lincoln, Neb.; B. C. Groh, of St. Paul, Minn.; J. A. Fernandez, of Havana, Cuba, and Thomas Bromley, Jr., of Muskegon, Mich., discussed various angles of the subject presented by Mr. Stevens.

Leo Keller, chief engineer of the Los Angeles Home Telephone & Telegraph Co., read a paper on "How We Keep in the Lead in Los Angles." It was discussed by Elmer E. Daicey, president of the South Bend Home Telephone Co., and C. E. Hollander, general manager of the Newark (Ohio) Telephone Co. The opinion expressed by these was that first class service, proper staff organization and a constant effort to please the public, were the main reasons for the success that, in spite of the most stubborn competition, had come to their companies.

The meeting then adjourned until Saturday morning. Friday evening the delegates attended a theater party given by the Automatic Electric Co.

The Saturday session opened with a short talk by H. N. Tolles, of the Sheldon School, on the "Science of Business." This was followed by a "question box," conducted by W. Lee Campbell, general superintendent of the Automatic Electric Co. It included a wide variety of operating questions presented by the delegates, each point being thoroughly discussed or referred to special committees for future action.

Recent Developments in Automatic Telephony.

Arthur Bessey Smith, of the Automatic Electric Co.'s engineering staff, then read a paper briefly summarizing the recent developments that have been made in automatic telephony.

H. D. Critchfield delivered an address on the history, aims and achievements of the Ohio Automatic Telephone Association. His address was followed by a paper prepared by Elsworth Keith, supply sales manager of the Automatic Electric Co., on "The Commercial Value of P. B. X.'s from the Standpoint of the Public Telephone Co.," which was read in his absence by E. L. Grauel of the company's Buffalo branch. This paper was discussed by E. D. Talbott, of Buffalo; K. W. Fort, of Chicago; Mr. Grauel and G. R. Johnston, of Columbus.

At noon the meeting adjourned while a buffet luncheon was served, the Automatic Electric Co. acting as host.

Mr. Johnston's paper on "Futures" reviewed in a comprehensive manner the more important elements that had gone into the development of automatic telephony from the operating side. Projecting these lines into the future, the author forecasted the most probable progress which will be added to that already achieved. J. B. Russell, vice-president of the Automatic Electric Co., President Daicey of the South Bend company, and Superintendent W. Lee Campbell discussed various features of Mr. Johnston's paper.

Grant Pelton, vice-president and general manager of the Automatic Electric Co., delivered a brief address on the "Responsibilities of the Operating Companies," pointing out that just as the manufacturer is obligated to develop the best possible apparatus, so the operating companies owe it to themselves and to the makers of the equipment to develop their business to the highest point possible.

A paper on "Dispatching and Supervision of Switchmen, Troublemen and Installers," by Michael Schwartz, of the Automatic Electric Co.'s operating department, was discussed by M. T. Caster, of Lincoln, Neb.; F. B. Moody, of Columbus, Ohio; Guy Watkins, of Newark, Ohio, and Leo Keller, of Los Angeles, Cal.

The last paper, "The Directory from a Service Standpoint," was presented by H. O. Dutter, general manager of the Bucyrus Telephone Co. It was discussed by R. A. Folsom, of Dayton; J. A. Fernandez, of Havana, Cuba; A. W. Surrell, of Dayton, and Roy Owens, of the Automatic Electric Co.'s Columbus office.

Among the delegates present were the following persons:

Ohio State Telepone Co.: S. G. McMeen, G. R. Johnston, B. H. Brooks, R. R. Stevens, O. O. Welsheimer, G. H. Smith, J. C. Boush, W. N. Tune, F. B. Moody, A. W. Surrell, W. A. Shoemaker, John Wicks, S. N. Ford, J. B. Rhodes, G. G. King, C. J. Queen, Virgil Hayden, J. D. Love, R. A. Folsom, C. Owen, A. Graham, M. B. Shank, E. B. Alspack, F. E. Wesley, C. F. Barnes, C. A. Swoyer, Oscar Orr, S. T. Evans and H. S. Self.

Tri-State Telephone & Telegraph Co., St. Paul, Minn., 37,500 telephones: R. L. Barry, B. C. Groh and A. J. Seymour.

Los Angeles Home Telephone & Telegraph Co., Los Angeles, Cal., 66,000 telephones: Leo Keller.

Cuban Telephone Co., Havana, Cuba, 18,000 telephones: J. A. Fernandez and H. C. Hart.

Federal Telephone & Telegraph Co., Buffalo, N. Y., 25,000 telephones: C. E. Ewing, H. M. Dixon, E. D. Talbott and J. G. Ihmsen.

Lincoln Telephone & Telegraph Co., Lincoln, Neb., 9,300 telephones: L. E. Hurtz, M. T. Caster, Geo. K. Gann, R. E. Mattison and T. S. Risser.

South Bend Home Telephone Co., South Bend, Ind., 6,300 telephones: Elmer E. Daicey, H. C. Moore, J. H. Mercer, J. B. Atkins, F. E. Williams, C. A. Torrey.

Saskatchewan Government Telephone Department, Regina, Can., 7,800 telephones: H. S. Shope.

Illinois Telephone & Telegraph Co., Chicago, 15,000 telephones: K. W. Fort.

Newark Telephone Co., Newark, Ohio, 4,200 telephones: C. E. Hollander and Guy Watkins.

Automatic Home Telephone Co., Pontiac, Ill., 1,000 telephones: J. L. Hofferber.

Rushville Co-Operative Telephone Co., Rushville, Ind., 1,350 telephones: Geo. H. Davis.

Bucyrus Telephone Co., Bucyrus, Ohio, 1,425 telephones: H. O. Dutter.

Van Wert Home Telephone Co., Van Wert, Ohio, 1,100 telephones: Irwin Geitgey and J. W. Longwell.

Tri-City Telephone Co., Clinton, Iowa, 1,600 telephones: C. F. Ingerman.

Decatur Home Telephone Co., Decatur, Ill., 3,100 telephones; F. L. Fisher.

Chartiers Telephone Co., Washington, Pa., 2,000 telephones: Wm. P. Routh.

Cass County Telephone Co., Dowagiac, Mich., 325 telephones: G. L. Hall.

Kenton Telephone Co., Kenton, Ohio, 1,500 telephones: W. A. Long and J. D. Park.

St. Mary's Telephone Co., St. Marys, Ohio, 750 telephones: R. K. Judy.

United Home Telephone Co., Muskegon, Mich., 2,000 telephones: T. Bromley, Jr.

Home Telephone Co., Champaign and Urbana, Ill., 2,200 telephones: H. T. Williamson.

Lincoln County Telephone Co., Manchester, Iowa: E. L. Farwell.

Wausau Telephone Co., Wausau, Wis.: H. I. Crawford.

Richmond Home Telephone Co., Richmond, Ind.: Wm. M. Bailey.

Memphis Telephone Co., Memphis, Tenn.: R. H. Polk.

Peoples Telephone Co., Superior, Wis.: J. C. Crowley, Jr.

Elyria Telephone Co., Elyria, Ohio: A. J. Curren and J. P. Brooks.

Hamilton Home Telephone Co., Hamilton, Ohio: J. B. Walker.

Pennsylvania Railroad, Pittsburgh, Pa.; D. D. Thompson, I D. Jones and E. W. Zimmerman.

Union Switch & Signal Co., Pittsburgh, Pa.: S. B. Merri- in.

Frankfort Co. Connects "Kiddies" With "Santa Claus."

Frankfort (Ky.) youngsters anxious to get the ear of Santa Claus to tell him some of their wants for Christmas get one of the major surprises of their young lives when, after a short wait, they actually get the patron saint of the season on the other end of the wire.

After some few experiences with "kiddies" calling and asking for Santa Claus, J. E. Chambers, manager of the Frankfort (Ky.) Home Telephone & Telegraph Co., thought the problem could be handled. He mentioned it to several of the department heads and William Murphy, wire chief for the company, volunteered to take the calls as long as he had little going on in his department. So now when a youngster concludes it would be nice to talk to "Santa," the call is switched onto Mr. Murphy's line and he does his best to satisfy the youngster at the other end as expeditiously as possible.

There is no publicity being given to this little bit of service, because Mr. Chambers wants to avoid the avalanche of calls that would surely follow, but many a tot has been spared the hurt that would have resulted from a gruff and unfeeling response if he chanced to get on the wire of an unsympathetic or busy operator. This is the first reason for the attention to such calls, although Mr. Chambers and Mr. Murphy also have in mind the advantages which may be gained by keeping all the stations in good working order and in relieving the operators of what could easily become a time-consuming nuisance.

Annual Meeting of Red Wing (Minn.) Telephone Co.

At the annual meeting of the Red Wing (Minn.) Telephone Co., the regular semi-annual dividend of 4 per cent. was declared and the following officers elected for the ensuing year: President, D. M. Neill; vice-president, C. A. Rasmussen; secretary and manager, V. S. Neill. The officers together with H. E. Akenson, W. C. Krise, G. W. Stumpf, E. H. Moulton, A. G. Scherf and N. H. Featherstone constitute the board of directors.

The assets of the company, as shown by reports presented at the meeting, total $125,806, of which the plant represents $112,404. During the year ending December 1 there was expended for improvement of the plant, $13,765. This includes the installation of a new Kellogg switchboard, with the latest automatic features. The operating expenses for the year just closed were $15,091.

On December 1 the Red Wing Telephone Co. had 1,857 subscribers, an increase of 47 over 1914.

New Subscribers Added to Chicago Telephone Co.'s System.

The improved conditions in general business are reflected in the operations of the Chicago Telephone Co. with respect to telephones added and discontinued. In November, 7,580 were added in the city, as compared with 6,970 a year ago. In the outside territory 1,429 were added, as compared with 1,115 a year ago.

In the city and the outside territory combined, 4,466 telephones were discontinued in November, this year, as compared with 4,876 last year, so that the gain was 4,543 this year, as against 3,208 last year. There are now 407,957 telephones in the city and 91,747 outside, making 499,704 in the territory operated by the company.

Increase in Swedish Telephone and Telegraph Business.

The director of the Swedish State Telegraphs estimates that the present year will be a record one as concerns the number of messages sent and the increase in the income connected therewith. It is calculated that the receipts in 1915 will amount to $2,432,000 contrasted with $2,160,000 in 1914. The increase in the income of the telephone service in 1915 over 1914, it is estimated, will amount to $830,000.

From Factory and Salesroom

Conventions: Minnesota, Minneapolis, January 25-26; Wisconsin, Madison, February 9-11; Kansas, Topeka, February 15-17

A 4,300-Mile Trip to Exhibit at National Convention.

Few of the many telephone men who inspected the interesting exhibit of the Relay Automatic Telephone Co., Ltd., at the Chicago convention last week, realized the tremendous obstacles that had to be overcome before the demonstration of this new type of automatic system could be made. The headquarters of the company are in London, England, and it was not until November 17 that A. Williamson, G. H. Bryant and C. H. Hall, in charge of the exhibit, knew that the convention was to be held as early as December 8. They had supposed the Independent meeting would not be held until January or February, as has been the custom in other years.

War conditions make both traveling and freight shipments exceedingly difficult in England. Had Mr. Williamson not possessed an unusual degree of Yankee ingenuity and enterprise, the task of dismantling, packing and shipping the apparatus a distance of about 4,300 miles in three weeks and then reassembling it, would have seemed impossible.

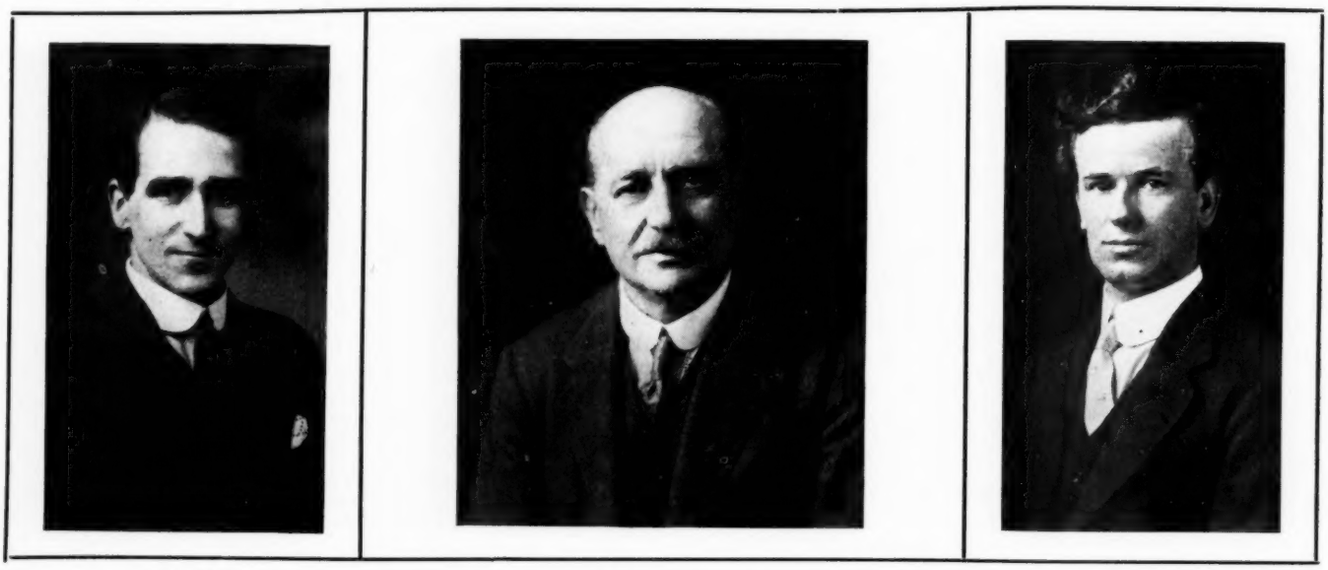
The story of this race against time, as told by Mr. Williamson, is interesting: "We had been figuring on exhibiting at the convention," said he, "but expected the date would be about the end of January or the beginning of February, as it had been in previous years. On the morning of Wednesday, November 17, on arriving at my office, Marconi House, Strand, London and turning to TELEPHONY, which had just come, to my amazement I noticed that the big convention was set for December 8, 9 and 10.

"I immediately called Mr. Bryant on the telephone and asked him if we could show our relay automatic plant in operation in Chicago three weeks from then. Mr. Bryant pointed out that the switchboard was then at work, and it would be necessary to tear it down and pack it into small cases, because we had no information as to the conditions we would have to meet in setting it up again. He scarcely thought it possible to do all that. Mr. Bryant was then asked if he would at least try, and he answered: 'Yes.'

Godfrey C. Isaacs is the managing director of the English Marconi company and also chairman of the Relay Automatic Telephone Co. With the assistance of the English Marconi company and hearty co-operation on this side of the Marconi Wireless Telegraph Co. of America, of which E. J. Nally is vice-president, and with good fortune, we succeeded in demonstrating our relay system in three weeks to the day. It was necessary to bring two engineers to set up the plant on such short notice, and G. H. Bryant and C. H. Hall were chosen for this work. As both these men are of military age a good deal of time was spent in getting special passports from the British foreign office, to enable them to leave the country. To keep the date in Chicago it was necessary that the material should be shipped from Liverpool not later than Saturday, November 20. On Friday, about 4 o'clock, the Cunard company telephoned that a new regulation had recently been issued by the War Office, which made it necessary that War Office sanction should be obtained before any telephone material could be shipped out of the United Kingdom.

After inquiries at the War Office and the War Trade Department, the Transport, the Admiralty, the Home Office and the Board of Trade, without being able to locate the particular department which issued such permits, two directors of the company went to the War Office and succeeded, at about 7 p. m. in obtaining the necessary order for the material to be shipped out of the country. To go back a moment, on Friday morning at 11 o'clock passages were booked with the Cunard company for the three people who were coming over, but when the company learned that the two engineers were of military age, the Cunard people refused to carry them. Fortunately the steamer New York, of the American line, was due to leave Liverpool at about the same time on the same day, and the two engineers shipped in her.

On arrival in New York, November 29, W. A. Thornton, a custom house broker, good naturedly set to work to get the material clear through customs and shipped by express to Chicago. On December 1, fourteen days after the decision was made, the material was received in good condition at Hotel LaSalle in Chicago.



C. H. Hall. A. Williamson. G. H. Bryant.

Even then, however, there was a vast amount of work to do. We did not engage to bring any telephone sets with us, and found difficulty in obtaining the proper type. It is true that we had two dials of our own manufacture and one lever impulse-sending device, but we needed a few more to demonstrate the system. We however obtained a number of dials of the old three-wire type. These were modified in regard to the arrangement of springs and changed over so as to eliminate extra impulses.

By working all night, and thanks to the fact that our relays will respond to a wide range of impulses, we were ready to demonstrate our system when the convention opened on the morning of December 8. The good fortune which attended us at the beginning of our efforts followed us right to the end. Thanks to that good fortune and to the hard, zealous and loyal work of Messrs. Bryant and Hall, we were able to interest all the visitors who called upon us, and to demonstrate our system throughout the whole of the convention period."

Marine Corps Field Telephones.

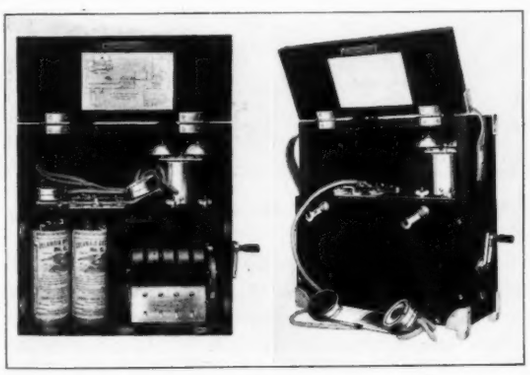
The Stromberg-Carlson Telephone Mfg. Co., of Rochester. N. Y., was recently awarded a contract for 150 field telephones for the use of the United States Marine Corps. This quantity, it is stated, represents the annual telephone requirements of that branch of the government service.

In the accompanying illustration is shown two views of the telephone from which an idea of its appearance and general assembly may be obtained. The cabinet is made of hard maple, finished with a dark red waterproof varnish and is reinforced and protected by cast aluminum corner pieces. The dimensions over all are: Height, 13½ ins.; width, 13½ ins., and depth 5¼ ins. This large size is accounted for by the allotment of space for two standard dry cells.

It is stated that the marine corps is reluctant to adopt a smaller set using flashlight batteries for the transmitters in that it is difficult to secure supplies of fresh cells of proper size in foreign ports of call. It is said that the No. 6 dry cell is procurable in nearly every city throughout both hemispheres.

The cabinet is provided with a leather carrying strap, and a handle covered with the same material. Metal hangers are fastened to the back panel so that the telephone may be used as a wall set in fortifications, or conveniently hung from the side of a trench.

The talking equipment consists of the Stromberg-Carlson No. 6-A combination telephone connected to the set by a six-



Stromberg-Carlson Field Telephone Adopted by U. S. Marine Corps.

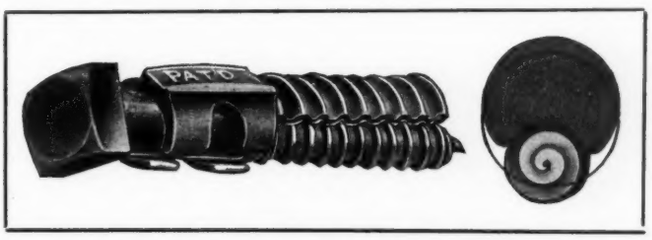
foot waterproof cord. This style of instrument is used to protect the transmitters from the severe jars caused by the blast and concussion from the fire of heavy ordnance when the telephone is used in fire control work. In the field the combination set and long cord allow the range finders and gunners a considerable latitude of motion. When closed for transport, the talking equipment is held in proper place by a clamp.

The 2,500-ohm ringer with which the telephone is equipped is mounted in the upper compartment and is protected from damage, due to carelessness in replacing the combination telephone, by a metal shield which surrounds the coils and other vital parts. The five-bar hand generator, likewise the condenser and induction coil, are contained within the lower left-hand section of the cabinet. A collapsible generator crank of novel design locks the generator and protects the handle when folded in place for shipment. All windings liable to absorb moisture are impregnated with a waterproofing compound.

This type of telephone, the company states, successfully passed the government test which consisted of ringing 30 field telephones of similar design, connected in multiple, through a total line resistance of 2,500 ohms.

A New Expansion Shield for Lag Screws.

The Diamond Expansion Bolt Co., of New York City, has recently placed upon the market an expansion shield for lag



"Diamond X" Expansion Shield for Lag Screws.

screws which is said to be entirely new in its principle of operation and in its design. It is covered by United States patents Nos. 1,155,613, 1,155,614 and 1,155,615.

It is a simple form of expansion shield for heavy duty, the shield being a single unit. The screw enters on the center at the outer end and travels along the tapered bore which emerges at the side and permits the screw to contact directly with the side of the hole as well as with the shield. The great displacement at the inner end produces, it is said, a very powerful expansion where it is most needed.

This new "Diamond X" shield, its manufacturer states, is meeting with great favor among contractors, builders, iron workers, plumbers, steam fitters and similar lines of construction work.

Until such time as all of the dealers have demonstrated this shield to its customers, the Diamond Expansion Bolt Co. is furnishing demonstration orders for this purpose. Such demonstration orders may be obtained by dealers now selling expansion bolts who desire to show the new shield to their customers. A limited stock will be furnished upon application, with the privilege of return should the new shield not prove satisfactory for their customers' requirements.

Two "1900" Batteries in Service Nearly Eight Years.

N. E. Kestor, of the Shell Rock Valley Telephone Co., Greene, Iowa, brought in to the national convention last week, two "1900" batteries which have been in service nearly eight years. They were installed, he says, on January 1, 1908, and taken out October 2, 1915, giving seven years and nine months of service. The Nungesser Carbon & Battery Co., of Cleveland, Ohio, manufacturer of "1900" dry batteries, is justly proud of this service test.

Paragraphs.

THE COFFEY SYSTEM & AUDIT CO., of Indianapolis, Ind., is installing its system of accounting and making an audit for the Consolidated Telephone & Telegraph Co., of

Thomasville, Ga. Immediately afterward it will install its system at Fitzgerald, Ga.

THE M. W. DUNTON CO., of Providence, R. I., is at work on a second edition of 5,000 copies of "Soldering Kinks" in book form. The first edition—5,000 copies—came off the press early in November and the supply is nearly exhausted. This booklet contains complete instructions and 69 practical soldering suggestions from users of Nokorode soldering paste. "Soldering Kinks" sells for 25 cents per copy.

A Double Action Boring Machine.

The Ford double action boring machine shown in the accompanying illustration operates by means of a double ratchet arrangement at the head. In boring the operator simply pulls one handle down and then the other, the bit going forward continuously. The speed of the machine is said to be limited only by the length and quickness of the pulls by the operator.

The Ford Boring Machine.

The head being less than three inches thick, the machine can be used in very narrow places. Any size of bit can be used in the machine, and it is adjustable to any height. The sprockets and chain are of high quality bicycle construction. The standard of the machine consists of two tempered steel tubes. It has interchangeable bronze bearings, and is said to run without any friction.

Two Ford bits are furnished with each machine. It is said to clear the hole without requiring a reverse motion. Duplicate parts may be obtained at any time from the manufacturer, the Ford Auger Bit Co., Holyoke, Mass.

This company also manufactures a single action boring machine and a number of styles of auger bits and bit extensions.

Telephone Time Service.

At Sydney, Autralia, any telephone subscriber may obtain the correct standard time by calling up the Sydney Observatory. If he wishes merely to check his watch or clock, he asks for "time," and is connected with an operator who reads off the correct time to the nearest half minute from a clock controlled by the standard clock of the observatory. If more accurate information is required, he asks for "exact time," and is connected with a high frequency buzzer which transmits the actual beats of the observatory clock.

New Recreation Feature of Chicago Telephone Co.

The Chicago Telephone Co. has added another recreation feature for its employes. This latest innovation is a shooting gallery, located at 321 West Washington street, Chicago. The place is equipped with tables and other devices, enabling the marksmen to assume various positions while practicing. Rifles and revolvers furnished by the men themselves are used. During luncheon hours and other leisure moments the men employes have access to the gallery for practice shooting. Teams and tournaments are to be scheduled, with trophies to be awarded the best marksmen.

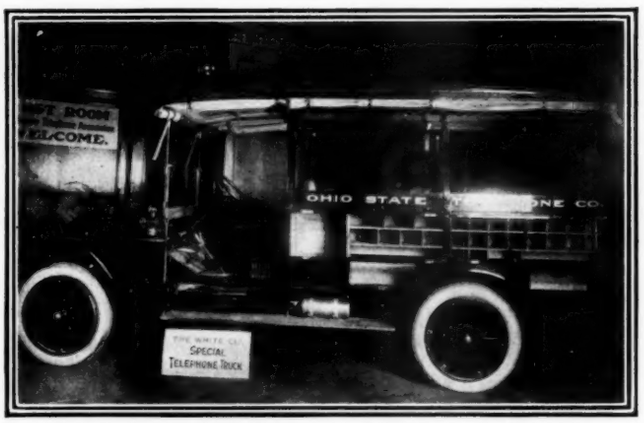
White Truck Exhibit at National Convention.

Many telephone men who visited the National convention last week will recall having seen in the main writing room on the ground floor of Hotel La Salle a three-quarter-ton White motor truck, which is one of seven White trucks recently purchased by the Ohio State Telephone Co., Columbus. Of special concern and interest to the telephone men was the body of the truck, which was especially designed for use in telephone construction work. Both sides of the body were fitted with compartments, bins and drawers that contained the many articles of small material, which are used in telephone construction and repair work.

Provision is also made in this truck for carrying the necessary tools and construction apparatus in such a position as to make them easily accessible for the workmen. Time formerly lost in locating material is said to be practically eliminated by the use of this plan. Facilities have also been provided for carrying hand tools and special brackets arranged for carrying pike poles and ladders. Even a place has been allotted for carrying tarpaulin for use in cold and rainy weather.

In addition to the two racks and side compartments there is a live load-carrying space in the body of the truck that is available for carrying wire, reels and other bulky materials. The tail gate has been so arranged that when opened, it provides a step for the workman to enter the body of the truck.

This telephone truck has been designed with a trailer coupling and a front bumper. Searchlights have been placed in front of the drivers. If at any time it is necessary to work at night, as is sometimes the case in emergencies, occasioned by winter storms, this light may be directed to the top of a terminal pole or to the bottom of a manhole without changing the position of the truck.



White Telephone Truck Exhibited at the National Convention.

White trucks of various capacities are being used by many telephone companies for all kinds of construction work. The White company states that it is the first company to develop a power-driven winch. This winch is used for drawing in cable and in loading and unloading cable reels from the truck.

F. H. Williams had charge of the exhibit and explained the merits of the White telephone truck to many interested telephone men. Further particulars may be obtained by writing the company at Cleveland, Ohio.

Out of the Mail Bag

On the theory of "All's well that ends well," the year 1915 might be considered a pretty decent sort of a twelve-month after all. It didn't start out very encouragingly to most business lines, but the prosperity that has been making itself evident in the country the last ninety days probably will do much to make many people overlook a bad beginning —especially those engaged in making and selling "cannon fodder," and the things that go with it.

TELEPHONY's mail bag shows that the telephone men of the United States approach the new year with a confident hope that it will bring an era of growth and constructive development. War conditions have not created a boom in the telephone industry. Let us thank Heaven that the business does not depend for its success on a bloody crusade. The loads of European money dumped into the United States by the warring nations, to pay for munitions, grain and all kinds of products, make for better conditions in the business world in general, and indirectly, of course, a slice of the foreign wealth reaches the telephone industry. But that is incidental.

As one of our subscribers puts it: "The farmers in my community are getting higher prices for their crops on account of the war, and, fortunately, the crops this year were 'corkers.' This increases the supply of money in this region and telephone companies are feeling the advent of much better times. At that, the telephone operators felt the depression in 1914 and the early part of 1915 much less than most other lines. I have reached the conclusion that we are in a mighty good, stable business."

R. V. Achatz, instructor in telephone engineering at Purdue University, La Fayette, Ind., in a recent letter, said:

"I have been much interested in the recent installments of both of the reading courses that TELEPHONY has been publishing. Mr. Shoemaker's articles must certainly be a great help to the manager who is wrestling with the problem of uniform accounting, and the Home Study Course should aid many ambitious men in increasing their knowledge of the fundamentals of the telephone art. It seems to me that both series of articles should be published in book form upon their completion, to place in more convenient form for occasional re-reading and for reference."

Charles F. Dougherty, manager of the Santa Maria exchange, of the Home Telephone & Telegraph Co., of Santa Barbara, Cal., writes:

"Our general manager, Albert Schuler, of Santa Barbara, on his way home from the San Francisco convention in his automobile, stopped over here and in the course of our conversation I mentioned that we had not been receiving TELEPHONY for some time. He instructed me to order it at once, as he considered it too valuable a paper for his managers to be without and of course I agreed with him, as I have missed TELEPHONY and will certainly appreciate receiving it again. Please enter our subscription. It will be like getting a good meal when a man is hungry."

"You valued journal has helped me over many rough places in the telephone business," writes D. A. Claar, of Queen, Pa., "and I sincerely wish for you the success you so richly merit."

Under date of December 1, Joseph M. Plaister, manager of the Fort Dodge Telephone Co., Fort Dodge, Iowa, says:

"Mr. Shoemaker's article in the last issue of TELEPHONY is most decidedly a move in the right direction. The many inconsistencies in connection with the handling of public utility problems in this country is only too well known, and if other journals can only be induced to follow your lead in setting forth a sane view of the whole situation, much good will result. Keep up the good work!"

F. H. Runkel, of the Portage (Wis.) Telephone Co., and C. H. Coar, general superintendent of the Northern Telephone Co., at Minot, N. D., also have written TELEPHONY, commending Mr. Shoemaker's articles on "A Greater Public Interest." The advantage of bringing telephone companies and the general public closer together is recognized by all telephone men, and Mr. Shoemaker's efforts in this direction are appreciated.

H. S. Coyle, of the Ohio State Telephone Co., at Cleveland, Ohio, in renewing his subscription, says:

"I enjoy TELEPHONY very much. I was one of the first subscribers to your journal when it first appeared in the field. In fact, I wrote an article which was published in one of the early issues, and many thereafter. I find that your paper has improved wonderfully, and it is now indispensable to everyone engaged in telephone work, whether clerical or technical. To the practical man TELEPHONY should prove invaluable if he desires to advance in the art of telephony. Your journal is worth many times the subscription price, and I find that I can hardly do without it."

Writing from Rochdale, Lancashire, England, Thomas Hargreaves, who is in the government telephone service, says:

"I failed to receive TELEPHONY for October 2, and as I do not want to miss a single issue, please send me another. Your technical articles on the telephone business are the best of the kind I have ever seen, and anybody with ambition should pay them serious attention."

O. F. Cosper, president and manager of the Independence (Ore.) Telephone Co., in a letter enclosing remittance for his subscription to TELEPHONY, adds:

"We look forward each Monday to the receipt of your paper, and it is read from cover to cover with profit."

"I don't know exactly when my subscription to TELEPHONY expires," writes H. W. Wolffing, Elyria, Ohio, "but am enclosing my check for another year. I have derived a great deal of good from the home study courses."

James E. Weston, general manager of the Juntura-Burns Telephone & Telegraph Co., which operates exchanges at Burns, Albritten, Riverside and Juntura, Ore., in a recent letter says:

"I file every copy of TELEPHONY, and if I lack one am lost and tangled up in the happenings in telephone circles for that week."

"Will you please put me on your subscription list again for TELEPHONY," writes E. O. Turner, of Davenport, Iowa, under date of November 22: "I thought I would try to get along without it until spring, but I find I cannot and be satisfied. Please send me last week's issue. Hope we have a great convention in December."

"You course in telephone work fills a long-needed want and should benefit all that are engaged therein," says W. H. Johnson, South Altoona, Pa., in a letter remitting for his subscription for another year.

In renewing for 1916, W. J. Scott, Akron, Ohio, says:

"I cannot commend too highly the value of your paper to those who read it. I am a very busy man or I would offer to solicit for you. I would suggest that the public would appreciate your paper if it was put before them, for it is not only good for telephone men, but would prove interesting to business men and others who use the telephone."

Henry C. Korn, of the Iowa Telephone Co., Iowa City, Iowa, in a letter enclosing remittance for his subscription, says:

"I do not want to be without your magazine. Mr. Kelsey's articles alone are worth the price."

Charles W. Frazier, Philadelphia, Pa., in an order to keep his subscription uninterrupted, says:

"I have always had pleasure and profit in reading TELEPHONY, and have obtained many valuable pointers out of its pages."

Strangely enough the thought expressed by Mr. Scott comes from W. B. Ellwood, president of the Altavista, (Va.) Telephone Co., who in a letter enclosing his check for subscription, says:

"We wish your paper could be put in the hands of every telephone subscriber in the world, and then that each subscriber could be interested in taking at least one share of stock in some kind of a public service corporation."

In a letter extending his subscription to TELEPHONY, R. E. Belt, of Greenfield, Iowa, offered congratulations on the program of the Home Study courses and expressed his appreciation of the department of "Practical Subjects, Letters and Discussions."

Condensed News Reports

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personal.

S. S. MCCOY, of Cody, Wyo., was recently appointed local manager of the Mountain States Telephone & Telegraph Co. at Worland, Wyo.

GEORGE X. CANNON has resigned his position as telephone expert of the Ohio Public Utilities Commission, Columbus, Ohio, effective January 1.

E. E. BENTON, of the Pine Bluff, Ark., office of the Southwestern Telegraph & Telephone Co., has been made manager of the Camden, Ark., office of the company.

O. QUALE, formerly associated with the Reedsburg (Wis.) Telephone Co., was recently made manager of the Hudson, Wis., exchange of the Wisconsin Telephone Co.

A. P. ROHRMAN, for many years connected with the United Telephone & Telegraph Co., at Lancaster, Pa., recently tendered his resignation as division manager at that place.

EDWARD L. LAX, for many years manager of the local exchange of the Central Union Telephone Co., at Edwardsville, Ill., has been placed in charge of the Collinsville and Highland exchanges in addition to his present duties.

W. E. YUND, secretary of the Spinks Corners Telephone Co., Benton Harbor, Mich., was recently operated upon at the Alexian Brothers Hospital, Chicago. He is expected to be fully recovered within the next two or three weeks.

G. W. LEYDA, manager of the Moravia Telephone Co., Moravia, Iowa, recently purchased the Mozomamie Telephone Co., at Mazomamie, Wis., from D. L. Bestor, taking possession on December 1. Mr. Bestor has retired from the telephone business.

H. C. HOUSTON, of Warrensburg, Mo., who for some time has been managing both the Warrensburg Home Telephone Co. and the Pleasant Hill Telephone Co., recently severed his connections with the Warrensburg company in order to devote all of his time to the Pleasant Hill exchange.

GEORGE SPALDING, for several years commercial manager of the Mountain States Telephone & Telegraph Co., at Denver, Colo., has been promoted to the position of division commercal superintendent of the Eastern division with headquarters in Denver. W. D. Emerson, district manager at Grand Junction, succeeds Mr. Spalding as Denver commercial manager.

W. P. HAWLEY, general manager of the Bluefield Telephone Co., Bluefield, W. Va., was in attendance at the national convention held last week in Chicago. The Bluefield Telephone Co. operates 11 exchanges, 500 miles of toll line and has 4,000 subscribers. Mr. Hawley was accompanied by W. A. Packey and E. C. Curtis, his associates in the company. Mr. Hawley is a state senator from the celebrated Pocahontas coal district, but first and last is a most enthusiastic telephone man.

E. B. WARNER, of Chadron, Neb., was one of the visitors at the national convention last week. Mr. Warner is general manager of the new Tri-State Telephone Co., organized with $750,000 capital stock. This company operates in three different states and has the distinction of appearing before three state commissions—Nebraska, Wyoming and South Dakota. It operates 32 exchanges, 500 miles of toll line and has 2 600 subscribers. E. M. F. Leflang is president of the company, A. E. Grantham vice-president and Eben E. Warner secretary and general manager.

New Companies and Incorporations.

BUSH, KY.—The Tri-State Telephone Co. has incorporated with authorized capitalization of $100,000. The incorporators are: Charles Chandler, G. S. Brock and N. T. Brock.

EUDORA, KANS.—Eudora Mutual Telephone Co. has been incorporated with $3,000 capital stock by J. D. Harris, Samuel Stanley and E. W. Melville.

PROTECTION, KANS.—The Citizens Rural Telephone Co. was recently incorporated, with $5,000 capital stock, by Geo. N. Johnson, E. G. Thorpe and Jacob Zimmerman.

CLITHERALL, MINN.—The Clitherall Mutual Rural Telephone Co. was recently incorporated with a capital stock of $5,040. The incorporators are: N. Anderson, president; O. C. Ukkelberg, vice-president; C. H. Leth, secretary, and S. E. Halvorsen, treasurer, all of Clitherall.

FERGUS FALLS, MINN.—Articles of incorporation of the Sebeka-Western Telephone Co. were filed recently. The company is incorporated with a capitalization of $700 and the officers are Aug. Aho, president; Martin Bengston, vice-president; Frank Gustafson, secretary; Carl Gustafson, treasurer, and Emil Maata, Victor Turnblad and A. Pearson, directors.

CHARLOTTE, N. C.—The Cullowhee Telephone & Power Co., Cullowhee, Jackson county, was chartered recently with $25,000 capital authorized, and $5,000 subscribed by J. N. Wilson and others. The company will operate telephone lines and supply light and power current in Jackson county.

OGDENSBURG, N. Y.—The Black River Telephone Lines, Inc., have been incorporated with a capital stock of $25,000. The directors for the first year are as follows: Howard Coats and Lydia Lints, of Morristown, N. Y., and Herman J. Donavin, of Ogdensburg.

LODI, OHIO.—The Lodi Telephone Co. was recently incorporated with $25,000 capital stock.

HOBART, OKLA.—The Everett Telephone Co. was organized recently with a capital stock of $560. The incorporators are: D. H. Knepper and E. M. Stringer, of Roosevelt, and J. H. Peck, of Hobart.

SPEEDMOORE, OKLA.—The Speedmoore Mutual Telephone Co. of Speedmoore, capitalized at $2,400, has been granted a state charter. The incorporators are Wallie Moore, John W. Taft, J. B. Williamson and John S. Hume, all of Speedmore.

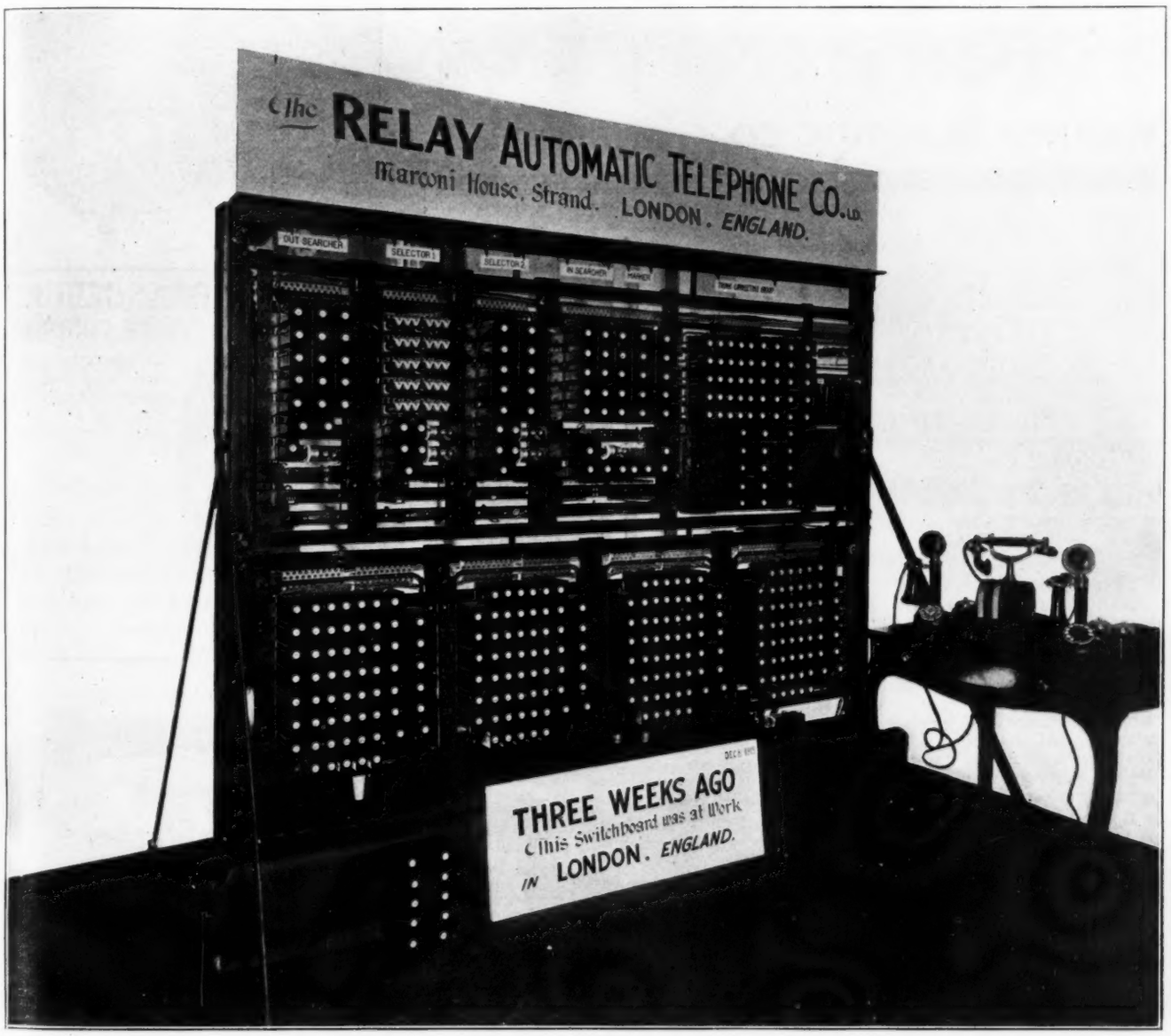
WAYNOKE, OKLA.—The Chimney Creek Telephone Co. was recently incorporated with a capital stock of $1,000. The incorporators are: J. H. Duncan, Waynoka, Okla.; C. E. Hancock, Waynoka, Okla., and M. D. Van Huss, Heman, Okla.

LAKE ANDES, S. D.—The Lakefront Telephone Co. was recently organized with a capital stock of $900. The incorporators are James Evans, president; W. F. Brooks, vice-president and Paul Picotte all of Lake Andes, S. D.

SEVIERVILLE, TENN.—The Sevierville Home Telephone Co. has been incorporated with $5,000 capital stock. The incorporators are A. J. Osham, J. C. Duncan, J. S. Adams and others.

IRON BELT, WIS.—The Iron Belt Telephone Co. was recently organized with a capital stock of $4,000. The incorporators are John Wueter, Thomas Trione and Ole Olson.

THE LATEST IN AUTOMATICS



This exhibit was in operation at the Convention. Our system will give you every class of Automatic Telephone Service by the use of

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Please tell the Advertiser you saw his Advertisement in TELEPHONY.

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20 Years in Service; Over 20,000 in Daily Operation

The first successful pole changer made.

It revolutionized "ringing conditions" in the telephone field; and set such a high standard then that it has never been equaled.

Economical and reliable, it has stood the test of long service, and is pronounced the one perfect pole changer by the leading telephone men of the country.

Let us solve your ringing problems.

WARNER ELECTRIC CO., Muncie, Ind.

Financial.

MERIDEN, CONN.—The Connecticut Telephone & Electric Co., of Meriden, has filed a certificate increasing its capital stock from $250,000 in 2,500 shares of common stock, par value $100, to $650,000 in 5,000 shares of common stock of the same par value and 1,500 shares of preferred stock, par value $100. The certificate was signed by directors D. C. Wilcox, B. L. Lawton, James J. White, William F. Rogers, L. E. Wilcox and B. C. Rogers.

JACKSONVILLE, ILL.—The Illinois Telephone Co. has just mailed its stockholders the thirty-fourth semi-annual dividend on its capital stock.

OZONA, TEXAS.—Stockholders and directors in the Ozona Telephone Co. have voted to increase the capital stock of the company from $15,000 to $25,000.

Elections.

PRAIRIE HOME, MO.—The Prairie Home Switchboard Co. recently elected officers for next year. The officers are: President, H. Fricke; vice-president, T. Hale; secretary and treasurer, F. L. Schilk. The other members of the board are D. Jones, T. Diel, H. Wear and S. E. Brooks, manager.

ANTIGO, WIS.—The annual meeting of the Morley Telephone Co. was held recently. George Marshall, James Barker and Robert Bonner were elected directors: The directors afterward elected the following officers: President, George Marshall; vice-president, James Barker; secretary and treasurer, Robert Bonner. The first year of the company was pronounced a very successful one. There are 60 telephones on the line.

CONCORDIA, KANSAS.—The stockholders of the New Hope Telephone Co. has elected its board of directors for the ensuing year as follows: A. D. Millirons, M. F. Shea, A. Q. Holbert, W. D. Johnston, Jennis Graham, Henry Nourie, John Brooks, John Breadmore, and D. Saindon.

MENOMINEE, MICH.—The Palestine Telephone Co. held a meeting recently. The following officers were elected: R. N. Seward president; Andrew Borgstrom vice-president; Nels Johnson, treasurer and Chas. Peterson, secretary.

MARYVILLE, MO.—Ed. F. Hamlin was recently elected secretary of the Peoples' Telephone Co. to succeed W. O. Garrett, resigned.

Miscellaneous.

AVON, ILL.—The name of the Avon Mutual Telephone Co. has been changed to the Avon Telephone Co.

SMITHLAND, KY.—The Smithland Home Telephone Co. has given out its plans for improving its plant and service by putting in cable and making other improvements. The system is growing, local subscribers now having access to 4,000 stations in Livingston and Crittenden counties.

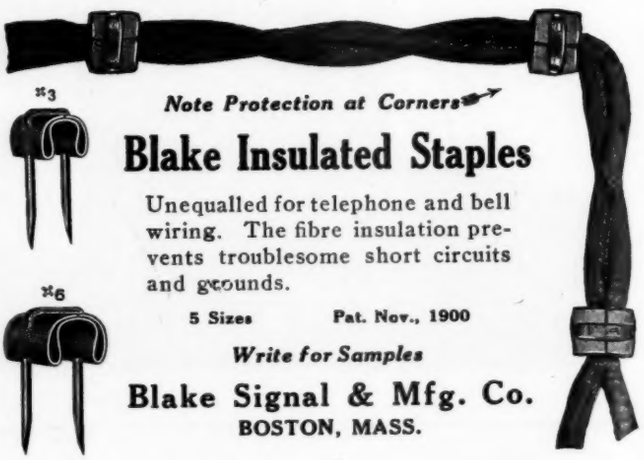
NEWARK, MO.—Dr. Pierce and W. B. Glover, owners of the telephone system at Newark, have sold the property to G. H. Kendrick of LaBell who will make the Newark system part of that of LaBelle. The transfer will not be made until the first of the year.

WELLSBURG, W. VA.—The Wellsburg Home Telephone Co. is keeping up with the growth of the city by improving and extending its lines. During the past six weeks nearly 50 new subscribers have been added to its lists and instruments installed. Claude Wyant, who organized the company 13 years ago is still president. The company has just paid its 26th consecutive semi-annual bond interest.

ORANGEBURG FIBRE CONDUIT

Safeguards the operation of your telephone system. Catalog H gives you the reasons as well as many valuable tables on trench excavation.

THE FIBRE CONDUIT CO.
ORANGEBURG, N. Y.
New York Boston
Chicago San Francisco



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Unequalled for telephone and bell wiring. The fibre insulation prevents troublesome short circuits and grounds.

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BOSTON, MASS.

REBUILT BARGAINS

Dean Electric Co. No. 1800 Straight line common battery Steel Hotel Sets @ $3.75; Harmonic with any cycle ringer	$4.75
Kellogg No. 631 Straight line common battery Steel Hotel sets @ $4.00; Harmonic with any cycle ringer	5.00
Swedish American No. 99, 5-bar 1600 ohm bridging compacts	7.00
Monarch 3-bar 1000 ohm bridging Hotel sets @ $3.75; with hinged transmitter	4.00
Kellogg talk and ring through type repeating coils	2.25
Dean Electric Co. No. 1620 Phantom coils	3.00
No. 1 glass knobs, size 1½x1½ inches, per 100, 60c; lots of 1000	5.00

For complete list of standard apparatus refer to our REBUILT BARGAIN BULLETIN No. 6 (Free on request). Stock received since Bulletin was published shown in our TELEPHONY ads.

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